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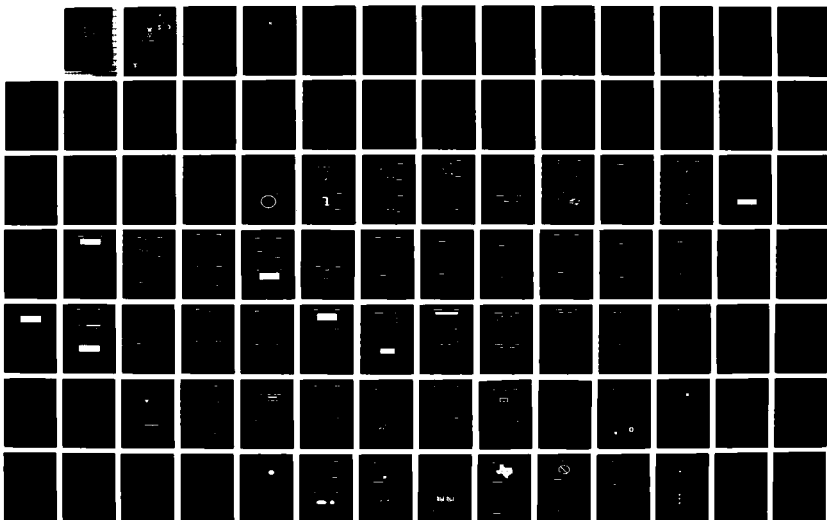                 COMPUTER-ASSISTED INSTRUCTION AUTHORING SYSTEM(U) AIR
                 COMMAND AND STAFF COLL MAXWELL AFB AL   J M SATHER
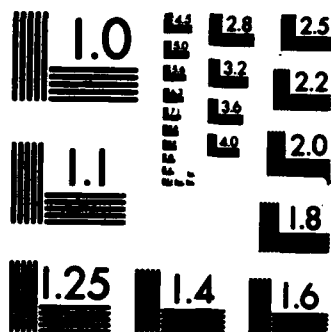
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# AIR COMMAND
## AND
# STAFF COLLEGE

## STUDENT REPORT

A DEMONSTRATION LESSON OF PLATO'S
PCD3 COMPUTER-ASSISTED INSTRUCTION
AUTHORING SYSTEM

MAJOR JOHN M. SATHER   87-2210

*"insights into tomorrow"*

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**TITLE** A DEMONSTRATION LESSON OF PLATO'S PCD3
COMPUTER-ASSISTED INSTRUCTION AUTHORING SYSTEM

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requirements for graduation.

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The major product of this research report is a computer-assisted instruction (CAI) lesson demonstrating the main features of Control Data Corporation's PLATO PCD3 CAI authoring system. This floppy disk lesson is on file at ACSC/EPT. This report contains a hardcopy of the lesson, "lessons learned" for future PCD3 CAI authors, a listing of the hardware and software needed to run PCD3, and a list of known PCD3 users in the military.

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# PREFACE

In the fall of 1986, the Air Command and Staff College Associate Programs (ACSC/EPT) purchased a computer-assisted instruction (CAI) authoring software package and associated hardware for use in creating CAI lessons for the ACSC seminar program. The CAI authoring software is the PLATO Design, Development, and Delivery (PCD3) system produced by Control Data Corporation and the hardware is the Zenith Z-158 personal computer.

The purpose of this Air Command and Staff College Research Project is to create a CAI lesson using PCD3 which demonstrates the major capabilities of the authoring language. This lesson will serve as a "hands on" introduction to the capabilities of the PCD3 authoring system and can be used by a novice PCD3 courseware author prior to studying the PCD3 user manual. Additionally, the author of this report provides future users with "lessons learned" as a result of three months experience with this CAI authoring package, a listing of the hardware and software requirements for running PCD3, and a list of other known PCD3 users in the military.

The lesson created for this Research Project is contained on one floppy disk and is approximately 140,000 words (i.e., 140K) in size. It is on file at ACSC/EPT. A hardcopy of this lesson is contained in this report.

The author extends a debt of gratitude to Major (Lt Colonel Select) Ronald E. Daniel, ACSC/EPT, who served as advisor on this project. He provided both valuable guidance in structuring this effort and expert advice in solving the real and imaginary software and hardware "bugs" the author encountered in using PCD3. The author also thanks Paul H. Pitts, Control Data Corporation, for providing documentation on the PCD3 system and technical advice on PCD3 features and functions.

# ABOUT THE AUTHOR

Major John M. Sather enlisted in the United States Air Force in 1970 after receiving a Bachelor of Arts Degree in Mathematics from the University of Minnesota.

His initial assignment was to the Air Force Human Resources Laboratory, Lackland AFB TX, as a computer programmer. After receiving his commission in 1975, Major Sather was assigned to the 4754 Radar Evaluation Squadron, Hill AFB UT, where he served as Chief of the Computer Services Section. In 1979 Major Sather was assigned to the 3400 Technical Training Wing, Lowry AFB CO, where he managed the use of McDonnell Douglas' Advanced Instructional System (a computer managed/computer-assisted instruction system) in selected technical training courses. From 1984 until his selection to attend Air Command and Staff College in residence, Major Sather served at HQ Space Command, Colorado Springs CO, as Chief of the Missile Warning Sensors Certification Branch in the System Integration Office.

In 1977 Major Sather was a Distinguished Graduate of Squadron Officer School and received a Master of Business Administration Degree from the University of Utah.

His decorations include the Defense Meritorious Service Medal, the Meritorious Service Medal with one oak leaf cluster, and the Air Force Commendation Medal.

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# GLOSSARY

**Authoring System** - Computer software which allows the user to create computer-assisted instruction lessons. Examples are Control Data's PLATO Courseware Design, Development, and Delivery (PCD3) authoring system and McDonnell Douglas' Advanced Instructional System (AIS).

**Content** - The information (e.g., text, questions, graphics) used by an author to build a computer-assisted instruction lesson. This information is entered into the compter by either the author or a second party.

**Instructional Strategy** - The logic used by the computer-assisted instruction lesson author to present material to the student. This logic would include modularization, decision points, alternate paths, and external interactions.

**Mainframe Computer** - Large-scale, powerful computer and associated peripherals costing thousands of dollars and requiring dedicated staffs of programmers, operators, and maintainers.

# Chapter 1

## BACKGROUND

### INTRODUCTION

Dozens of professors are incorporating computers into their courses, thus ushering in a long-promised era of "computer-aided instruction," or CAI, across the campus. . . . In recent years, the appearance of a "growing body of good higher education software--a long awaited critical mass" has finally enabled the computers to be incorporated into learning (6:8).

Of course computers can be programmed to do some of the things that teachers do--for example, give information, exercises, and tests--but they cannot deal with unexpected questions or unprogrammed misunderstandings. Human educators--instructors, trainers, tutors--are intuitively able to do this rather well, but intuition cannot, by definition, be programmed. Also, although a computer screen can be used for displaying text, it is an uncomfortable and unsatisfactory substitute for the pages of a book (4:85-86).

The above two quotes offer differing views on the use of computers in education. People will line up on both sides of the issue, but like other great debates, there are no clear cut answers. This paper does not solve the debate or even address the pros and cons of computer-assisted instruction (CAI). Rather, this paper accepts CAI as a given (i.e., the decision to use CAI has already been made) and examines one of the newest CAI authoring systems available on the market.

This examination takes the form of developing a CAI lesson for the Air Command and Staff College Associate Programs (ACSC/EPT), Maxwell AFB AL, using this new authoring system to demonstrate its major features. Although the main product of this report is the floppy-disk lesson on file at ACSC/EPT (hardcopy at Appendix A), this paper also discusses the steps followed in developing this lesson, defines the hardware and software required to run the lesson, discusses some helpful hints learned while using the authoring system, and lists points of contact within the military of other known users of the authoring system.

## THE CAI AUTHORING SYSTEM

In the fall of 1986, the Air Command and Staff College Associate Program purchased Control Data Corporation's PLATO Courseware Design, Development, and Delivery Authoring System, referred to as PCD3. PCD3, released to the public in the summer of 1986, was developed over a seven year period and is Control Data's entry into what their director for PLATO development calls the fifth generation of authoring systems (8:5). This fifth generation of authoring systems is designed to provide tools for the CAI author that cover the entire gamut of courseware development from instructional strategy design to content building to test and evaluation (8:4). Additionally, the PCD3 system is intended to respond to those people in the CAI community who claim you need a mainframe computer if you want a powerful CAI authoring capability (3:14).

PCD3 is designed to run on a stand alone microcomputer. To author PCD3 courseware, the hardware requirements are an IBM-PC or 100% compatible system; a minimum of 512K random access memory (RAM); one 5 1/4-inch floppy disk drive and a 10 megabyte hard disk; and a graphics adapter card. To deliver PCD3 developed courseware to a student, the hardware requirements are the same as for authoring except a minimum 250K RAM vice 512K and a second 5 1/4-inch floppy disk drive can be substituted for the hard disk.

## Chapter 2

## INSTRUCTIONAL SYSTEM DEVELOPMENT

### PCD3 LESSON DEVELOPMENT

The purpose of this PCD3 lesson (hardcopy at Appendix A) is to provide the prospective PCD3 courseware author an appreciation of the major features of the authoring software. It is a "hands on" view of the system capabilities and is intended to be a prelude to the study of the software documentation. It is not intended to teach a prospective author how to use PCD3. That task is left to the PCD3 user manual.

Although this is not an ACSC curriculum lesson per se, the framework of the Instructional System Development (ISD) process was followed in creating this lesson. The following discussion addresses the five steps in the ISD process (7:--).

### STEP 1-ANALYZE SYSTEM REQUIREMENTS

As previously mentioned, the ACSC Associate Programs purchased PCD3 in the fall of 1986 for use in developing computer-assisted education (CAE) lessons for the seminar program. The only documentation existing which outlines the PCD3 system capability is a 380-page user's manual. Since this PCD3 system is new, not only to ACSC/EPT but also to Control Data, no demonstration lessons on the capabilities of PCD3 were supplied by Control Data with the purchase of this system. Therefore, there is a need to create a CAE lesson (using PCD3) which demonstrates the PCD3 system features as outlined in Control Data's PLATO PCD3 Authoring System User Manual (publication no. 76770763). This lesson would be used by a novice PCD3 CAE author as a "picture is worth 1000 words" introduction to PCD3 prior to studying the user manual.

### STEP 2-DETERMINE EDUCATIONAL REQUIREMENTS

Since the target audience for this lesson has no previous experience with the PCD3 authoring system, the educational requirements are defined by the contents of the PCD3 user manual. Additionally, since the CAE lesson is presented in a modular format where the student can pick and choose what he/she desires (via a menu), the student can bypass any material irrelevant to his/her educational requirements.

## STEP 3-DEVELOP OBJECTIVES AND TESTS

The objective of this lesson is to create within the student an appreciation for the capabilities of the PCD3 authoring features. Since this learning experience is more affective learning than cognitive, there are no tests developed for this lesson.

## STEP 4-PLAN, DEVELOP, AND VALIDATE

The PCD3 user manual was the source of material used to develop this lesson. The lesson is organized in a topical pattern and basically tracks with the various chapters in the user manual. The lesson is broken up into six major segments with the student being able to explore any and all segments in any sequence he/she desires. These segments are as follows:

Courseware Strategy: This segment corresponds to Chapter 4 of the manual. It discusses the main building blocks of a PCD3 lesson which are the six different lesson nodes--Event, Strategy, Menu, Decision, List, and File. It also discusses the various paths through a lesson--linear, branching, looping, and backflow.

Text: This segment follows Chapter 5 of the manual and discusses the different attributes and enhancements of the text used in a lesson. Text fonts, size, direction, rotation, and animation are some of the features covered.

Graphics: This segment corresponds to Chapter 6 in the manual and discusses the various objects (i.e., box, line, vector, arc, circle, and ellipse) that can be used to build lesson graphics. Editing capabilities for graphics are discussed and examples of graphics are displayed.

Queries: This segment corresponds to Chapter 7 in the manual and discusses the various features of the query (i.e., question) used in a lesson to interact with the student.

Content: This segment corresponds to the discussion of the Content Base in Chapter 3. It covers what the Content Base is and the advantages of using it in a PCD3 lesson.

Variables: This segment corresponds to Chapter 8 in the manual and discusses both the system-defined and the author-defined variables used to enhance a PCD3 lesson by individualizing it for each student.

The author will validate this lesson by executing it in the student mode to check for completeness and proper flow through and between lesson segments.

## STEP 5-CONDUCT AND EVALUATE INSTRUCTION

The test for completion for this lesson will be its use by ACSC/EPT in a training program for novice PCD3 authors.

NO PRINT

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# Chapter 3

## HARDWARE/SOFTWARE ENVIRONMENT

### LESSON DELIVERY REQUIREMENTS

To run this PCD3 lesson in the student delivery mode, the following hardware and software are required (2:1-4 - 1-5):

- IBM-PC or IBM-PC compatible with at least 256K RAM. The software to run a lesson requires approximately 200K RAM, therefore, an author with a 256K RAM system can write a lesson no larger than 56K.

- Graphics adapter card and supported monitor (refer to the PLATO Personality Disk user manual).

- Two 5 1/4-inch floppy disk drives.

- Student Delivery Disk containing the PCD3 lesson and the files necessary to run the lesson.

The Student Delivery Disk for this lesson is actually two disks. The reason for two disks is that the PCD3 lesson (i.e., file js1.cd3) is too big to fit on the same disk with the software necessary to run the lesson. The contents of the two disks are as follows:

### Disk #1

| File | Definition |
|------|-----------|
| command.com | MS-DOS 3.2 commands. |
| lll.exe | Low level library. Controls hardware-dependent operations and must be loaded first. |
| cd3drive.exe | Student driver. Presents the lesson to the student. |
| cd3drive.sym | Required to execute "load and do" options. |
| cd3drive.txt | Text for student driver. |
| pcd3.cst | PCD3 authoring system character set. |

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| File | Definition |
|------|------------|
| ps.exe | Process switcher. Required when using a file node. |
| js2.cd3 | A small PCD3 lesson used as a sample file node in the larger js1.cd3 PCD3 lesson. |
| tiny.chr<br>tiny.cst | Required for tiny text. |
| standard.chr<br>standard.cst | Required for standard text. |
| heavy.chr<br>heavy.cst | Required for heavy text. |
| bold.chr<br>bold.cst | Required for bold text. |

Note:   The command.com file is created when a blank disk is formatted, and all the other files (except the author created js2.cd3) are supplied by the vendor on either the PLATO Personality Disk, the three PCD3 Authoring System Disks, or the PCD3 Delivery Software Disk.

## Disk #2

| File | Definition |
|------|------------|
| command.com | MS-DOS 3.2 commands. |
| js1.cd3 | Main PCD3 lesson. |
| js2.cd3 | Extra copy of sample PCD3 lesson used as file node by js1.cd3 |
| js2.stu | Student status file used by the RESTART function. Automatically created by the system. |

## RUNNING THE LESSON

This lesson (i.e., js1.cd3) is very simple to run. Just do the following:

1.   Insert Disk #1 in the A drive (left, or top).

2.   Insert Disk #2 in the B drive (right, or bottom).

3.    Turn on the microcomputer to boot the system.   If the computer is already on, hold down the CTRL and ALT keys

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while pressing the DEL key to boot the system.

　　　　4.　Press　the RETURN key in response to the ENTER NEW DATE prompt.

　　　　5.　Press the RETURN key in response to the ENTER　NEW TIME prompt.

　　　　6.　The A> prompt will appear.　Enter "111" and press the RETURN key.

　　　　7.　The　A> prompt will now come back on　the　screen. Enter "ps cd3drive b:js1" and press the RETURN key.

　　　　8.　The computer will now load file js1.cd3 from the B drive and execute it.　Just follow the instructions on the screen to step through the lesson.

　　　　9.　You can terminate the lesson in one of three ways:

　　　　　a.　Execute the entire lesson;

　　　　　b.　From　the main menu screen within the　lesson, press SHIFT-RETURN　which will take you to the final screen　and then press RETURN; or

　　　　　c.　Hold the CTRL key down and press the BREAK key (labelled SCROLL LOCK) at any point in the lesson.

　　This lesson was created and runs successfully on a Zenith Z-158 (640K RAM) with a ZVM-133 monitor.　It also　runs　(to　a degree)　on　the IBM-PC compatible Televideo　portable　computer. However,　since　the　Televideo only had 256K　RAM,　the　js1.cd3 lesson　(which is 140K RAM in size and needs an　additional　200K RAM for the accompaning PCD3 programs) terminated prematurely due to insufficient storage.

　　If a printer is hooked up to the microcomputer,　you can get a　hardcopy　of　a lesson screen by simultaneously　pressing　the SHIFT　and　PRINT SCREEN keys.　The hardcopy of　the　lesson　at Appendix　A　was printed using two different printers--a　Citizen MSP-10 and an EPSON LQ-800.

NO PRINT

# Chapter 4

## HINTS FOR THE PCD3 AUTHOR

### LESSONS LEARNED

In working with the hardware, software, and documentation and during discussions with other users (mainly Major Ron Daniel, ACSC/EPT), the author gained valuable "lessons learned" that can be beneficial to future PCD3 authors. One word of caution regarding these "lessons learned" is that they are generated from the author's relatively limited exposure to PCD3 and are not from someone who can be called an expert in understanding the system.

### SAVING YOUR WORK

Periodically, "back out" of the PCD3 authoring mode (via the F8 key) to save your work on the hard disk. The computer has been known to lock up for no reason during authoring, resulting in lost effort. Also, after finishing a day's work, make a backup copy of your lesson using MS-DOS to copy the lesson from the hard disk to a floppy disk. If the hard disk is drive c, put your floppy in drive a and use the MS-DOS copy statement: C> "copy filename.cd3 a:".

### INSERTING A MENU

At one point during lesson development, the author had a strategy map containing six event nodes (A through F). The author tried to insert a menu at the top of this strategy map with the goal of converting the six event nodes to menu options. For some unknown reason, the system would not allow the insertion of a menu at the top of the strategy map. Instead, the menu node had to be inserted between events A and B and then the MOVE command used to move the events to the right of the menu node. When the author recreated this scenario at a later date, the system wouldn't allow the menu to be inserted at any point in the strategy map.

### BACKFLOW

Backflow between different levels of strategy will work properly only if the "END BACKFLOW" flag for the first node in the strategy level where backflow starts and each intervening level (until the stop backflow level is reached) is set to

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"FALSE." The default value for this flag is "TRUE." If these
flags are not set, backflow will not proceed beyond the
originating strategy level.


## FONTS

There are five system-supplied fonts available for use in a
PCD3 lesson. The five fonts are standard, heavy, tiny, thin, and
italics. Additionally, you may create your own fonts using a
separate Dot Graphics program. However, due to system
limitations, only three fonts can be used in any one lesson.
The standard font is resident in the software and is always
available. Two of the remaining fonts can be specified by the
PCD3 author. To specify these two fonts do the following:

    1. From the PCD3 Index page in the authoring mode (see
figure 3-3 on page 3-6 of the PCD3 user manual) press the F9
(DATA) key.

    2. From the File Data Display page (see figure 5-24 on
page 5-27 of the user manual) press "f" for fonts.

    3. Press "a" for font a and type in heavy, tiny, thin,
italics, or your own specially created font.

    4. Press F8 (BACK).

    5. Press "b" for font b and type in heavy, tiny, thin,
italics, or your own specially created font.

    6. Press F8 (BACK).

To use these other two fonts you have to first be in the
text mode (refer to Chapter 5 of the user manual). After
entering the text mode do the following:

    1. While holding down the SHIFT key, press the "F4"
key, release, then press the corresponding "a" or "b" key.

    2. If you are using the tiny font, press the CAPS LOCK
key.

    3. You can now enter text in the font you chose.

A few words of caution about using font a or font b. First,
not all the characters that you can use via the standard font are
available in these two fonts. For example, you don't have a
period available. Second, if font a is "tiny" and you enter text
using this font and then you change font a to "thin", your
previously entered "tiny" text will automatically change to the
"thin" font.

## RESTART

RESTART is a feature discussed (somewhat) on pages 4-41 and 4-64 in the user manual. RESTART allows the author to designate points in the lesson for student exit and reentry. These exit and reentry points must be either menu or event nodes. If you don't use the RESTART function, the student can still exit the lesson at any time (via pressing CTRL-BREAK (SCROLL LOCK)) but when the student returns to the lesson at a later time, he/she will go to the beginning of the lesson, not where he/she left off.

To set the RESTART flag for an event or menu node, you must first enter the node. After entering, press F9 (DATA) and then choose the restart function by toggling the "r" key until you have selected "SET RESTART". You then need to create some text in the event or menu node to tell the student to press CTRL-BREAK (SCROLL LOCK) if they want to exit the lesson. If they choose to exit, a file will be created with an .STU file extension on the disk containing the lesson file. This .STU file will be used to tell the computer where to restart the lesson when the student signs back on.

If you set the RESTART flag in an event or menu node, you need to set the CLEAR PREVIOUS RESTART flag in a follow-on event or menu node. If you don't use this flag and a student exits the lesson a second time, he/she will reenter at the first exit point rather than the second exit point.

Note: When you use a file node in your lesson you must follow this node with a blank event node that has the CLEAR PREVIOUS RESTART flag set even though you never used a RESTART flag in your lesson. If you don't set this flag, all subsequent users of this lesson will enter the lesson at the node following the file node rather than the beginning of the lesson.


## JUDGE ON TIME

The judge on time option for a query is discussed on page 7-11 of the user manual. What they don't tell you is that you cannot use the RETRY option for an incorrect response if you judge on time. For example, if you give the student a problem with a five minute time limit, the student can't enter an answer after three minutes to see if it's correct and if not, work for another two minutes to come up with the right answer. Once an answer is entered, the timer is set to zero seconds and no more input is allowed. You need to make the student aware of this situation if you use the judge on time option for a query.


## HOW MANY CHANCES TO ANSWER?

If you create a question and are going to allow the student to answer more than once if their initial response is wrong, you need to control how may incorrect tries the student can have. You can do this by using the system variable "$tries." See

figure 7-16 on page 7-27 of the user manual for an example.


## ANIMATION

The user manual states that you can animate text and graphics (page 5-23) but they never show you how to animate graphics and the animation of text example on page 8-48 is somewhat confusing.

To animate text do the following:

    1.    Enter the text on the screen.    Ensure the text is entered using the REWRITE mode.    Note the x and y coordinates of the text as outlined on page 8-46 of the user manual.

    2.    Enter the EDIT function to modify this text.

    3.    Choose the LOCATION option.

    4.    Choose the VARIABLE LOCATION option.

    5.    You will now be asked to specify a variable which will tell the computer the x coordinate of the text.    Enter a variable name (e.g., xcor).

    6.    Enter the x coordinate value from step 1 as the initial value for this variable.

    7.    Answer the temporary/permanent question and the description of the variable question.

    8.    You will now be asked to specify a variable which will tell the computer the y coordinate of the text.    Enter a variable name (e.g., ycor).

    9.    Enter the y coordinate value from step 1 as the initial value for this variable.

    10.  Repeat step 7.

    11.  You now need to create the following statements around the text entry you entered in step 1.

        a.   erase screen

        b.   assign xloc ← x1

        c.   assign: yloc ← x2

        d.   repeat x3 times

        e.      assign: xloc ← xloc - x4

        f.      assign: yloc ← yloc + x5

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g.      text   "Step 1 text in REWRITE mode"

h.  end repeat

Notes:

(1)    x1, x2, x3, x4, and x5 are variables assigned by you (see figure 8-27 on page 8-44 of the user manual for some sample values).

(2)    The minus sign in statement e and  the  plus sign in statement  f will move the text to the left  in  the  x direction  and up in the y direction.   Text moved to the left in the x direction will not paint the screen.  Most text moved up in the y direction will not paint the screen.   Two known exceptions are lower case "g" and "p" which will paint when moved  up.   The use of all capital letters should avoid this problem.

(3)   Text moved to the right in the x direction or down in the y direction will paint the screen.

(4)    Statements b and c determine where the  text will be located on the screen prior to animation.

(5)    Statements  e and f move the text.   If  you want to move in the x direction only,  eliminate statement f.   If you want to move in the y direction only, eliminate statement e.

(6)   The $\phi$ symbol used in statements b,   c, e, and f is created by pressing the ESCAPE key.

The  only graphic the author tried to animate was a  circle. The  same  steps as outlined above were followed except the  text was replaced by a circle.   The problem encountered in trying  to animate  the  circle  was the inability to draw the circle  in  a REWRITE mode.   Therefore, when the circle moved, it didn't erase itself--it painted the screen.


OTHER PCD3 USERS

Besides Maxwell AFB, there are at least  three other military organizations  looking at the PCD3 product.   These organizations and points of contact are listed in Appendix B.  This information could prove useful for exchanging thoughts,  ideas,  experiences, etc. in regards to PCD3.

15

NO PRINT

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5. Smith, James M. (ed.). National Security Policy and Process. Maxwell AFB, AL: Air Command and Staff College, 1987.

#### Articles and Periodicals

6. "Campus-developed software is enhancing the computerized business of learning." University of Utah Review, Vol. 20, No. 1 (August - September 1986), p. 8.

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## B.  RELATED SOURCES

### Books

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The PLATO Newsletter. Issue 3, Vol. 1, June 1986.

# APPENDICES

NO PRINT

# APPENDIX

Appendix A

Hardcopy of PCD3 Lesson

NO PRINT

# APPENDIX A

## PCD3 DEMONSTRATION LESSON

Notes:

1. Some screens change automatically (via a timer) in the actual lesson. This feature can't be demonstrated in this printout.

2. Some screens have flashing items on them. This feature can't be demonstrated in this printout.

3. Some data on the screens appear on the screen a step at a time. This printout reflects the "final" screen containing all the data.

4. On some screens, part of the information is erased and replaced with new data in creating a new screen for the student.

5. The animation examples in the actual lesson can't be demonstrated in this printout.



WELCOME TO THE WIDE & WONDERFUL

OF PCD3
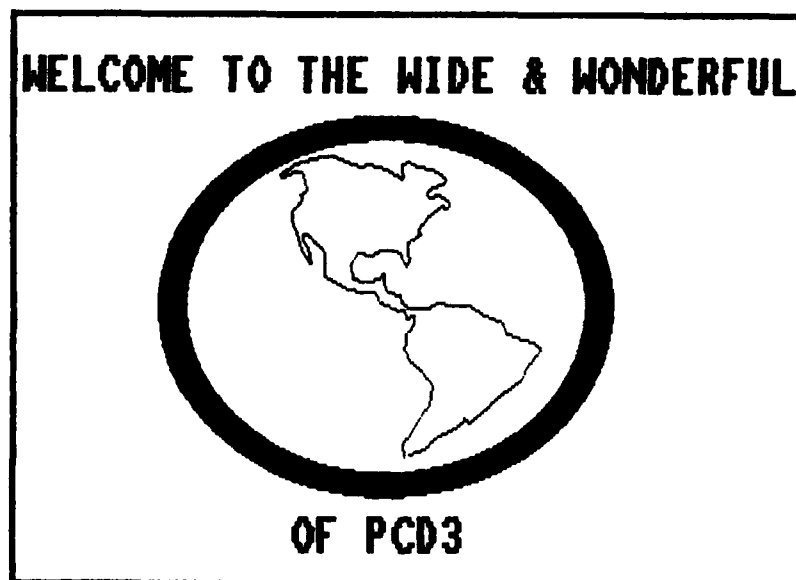
The purpose of this lesson is to demonstrate some of the features of the Plato Courseware Design, Development, and Delivery (PCD3) computer-assisted instructional (CAI) system.

The information in this lesson is based on the PLATO PCD3 Authoring System User Manual, Control Data Corporation, Minneapolis, MN, 1986 (2:--).

This lesson will not teach you how to use PCD3. To accomplish that task you will have to refer to the PCD3 Authoring System user manual (Control Data Corporation publication number 76770763).

Sounds exciting. Let's go!

Most of the screens you will see will be in this format.

Information for you to read will be in this upper box while

Any instructions for you to do (i.e., pressing a key or keys) will be down here.

24

Many screens will change automatically (based on elapsed time) while other screens will change only if you depress certain keys. You'll be instructed as to which keys to press in the box below.

The most popular key for you to press will be the "RETURN" key located as shown below on the keyboard diagram.

RETURN key

SPACE BAR

Instructions
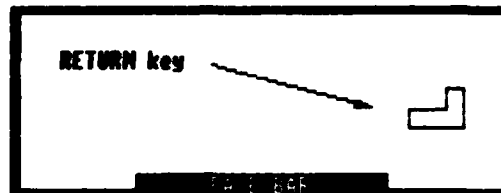
You may be asked to press "SHIFT-RETURN" which means to hold down the "SHIFT" key while pressing the "RETURN" key. You can use either of the two "SHIFT" keys located as indicated on the keyboard diagram below.

RETURN key
SHIFT keys

SPACE BAR

Instructions
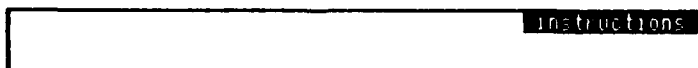
If you are asked to enter a short response (i.e., Yes, no,
your name, etc.) just use the keyboard as if it were a
typewriter.  If you make a mistake in typing you can
erase your error by using the "BACKSPACE" key located as
indicated in the keyboard diagram below.

BACKSPACE key ──────────►  ▭

RETURN key
SHIFT keys

▭

SPACE BAR

Press RETURN to continue.

---
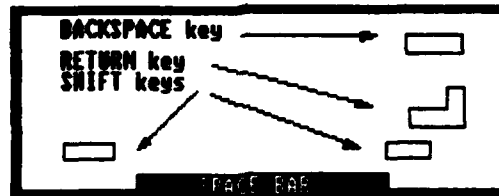
This lesson is divided up into six components covering
the following topics:

1.  Courseware Strategy
2.  Text
3.  Graphics
4.  Queries
5.  Content
6.  Variables

The next screen will be a menu for you to select the
topic you are interested in.

When you finish a topic you will be sent back to the
menu to make another selection.

To exit the menu you will need to hit the SHIFT-RETURN
keys from the menu screen.  To exit from this lesson at
any time press CTRL-BREAK (i.e., SCROLL LOCK).

Press RETURN to continue.

**Nodes**

```
+----------------------------------------------------------+
|                                                          |
|            a.   COURSEWARE STRATEGY                       |
|                                                          |
|            b.   TEXT                                      |
|                                                          |
|            c.   GRAPHICS                                  |
|                                                          |
|            d.   QUERIES                                   |
|                                                          |
|            e.   CONTENT                                   |
|                                                          |
|            f.   VARIABLES                                 |
|                                                          |
+----------------------------------------------------------+
```

(- = not available)                    (+ = previously selected)


Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.


```
+-------------------------------------------------------------+
| ...                                          information    |
|                                                             |
|                                                             |
|                                                     SIX     |
| A PCD3 lesson is made up of any number of                   |
| different "node" types.                                     |
|                                                             |
| The nodes are presented to a student in a sequence          |
| defined by a  strategy map   The   strategy map             |
| is defined by the courseware author.                        |
|                                                             |
| A sample strategy map is shown on the next screen.          |
|                                                             |
|                                                             |
|                                                             |
|                                                             |
+-------------------------------------------------------------+
```
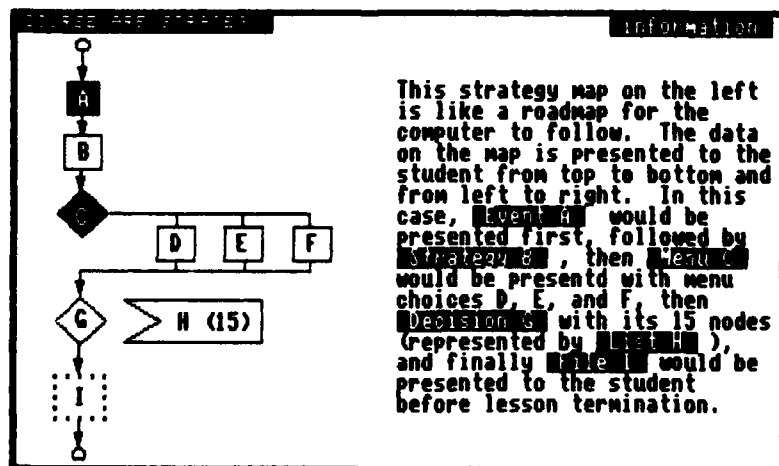
```
+-------------------------------------------------------------+
|                                              Instructions   |
|    Press RETURN to continue.                                |
+-------------------------------------------------------------+
```

27

This strategy map is invisible
to the student and can only
be seen by you, the author.
The map can contain any
combination of nodes.

The six different nodes (each
represented by a unique symbol
on the map) which can be used
to create a PCD3 lesson are:

EVENT (A)
STRATEGY (B,D,E,F)
MENU (C)
DECISION (G)
LIST (H)
FILE (I)

Press RETURN to continue.

---

This strategy map on the left
is like a roadmap for the
computer to follow.  The data
on the map is presented to the
student from top to bottom and
from left to right.  In this
case, Event A would be
presented first, followed by
Strategy B , then Menu C
would be presentd with menu
choices D, E, and F, then
Decision G with its 15 nodes
(represented by List H ),
and finally File I would be
presented to the student
before lesson termination.

Press RETURN to continue.

28

# So let's look at the SIX different nodes.

The next screen will allow you to select the sequence in which you want to view the six different nodes.

**Nodes**

Type the letter of your choice **>**

or press SHIFT-RETURN to exit menu.

a. Event

b. Strategy

c. Menu

d. Decision

e. List

f. File

(- = not available)                    (+ = previously selected)

Note:  Choose the node you want to look at by pressing one of the a thru f keys.  To exit this menu and continue on with Courseware Strategy press SHIFT-RETURN.

An EVENT node (symbolized by a ■ on the strategy map) is the building block of a PCD3 lesson. It contains the instructional materials presented to the student. It can contain such items as:

Text (as you see on this screen)

Graphics

> Hi, I'm a graphic.

Questions (known as queries which allow student interaction)

Are we having fun yet?
>

To answer the question, please enter    instructions
your "true" feelings and press RETURN.

An EVENT node (symbolized by a ■ on the strategy map) is the building block of a PCD3 lesson. It contains the instructional materials presented to the student. It can contain such items as:

Text (as you see on this screen)

Graphics

> Hi, I'm a graphic.

Questions (known as queries which allow student interaction)

Are we having fun yet?
> yes
Super!

To answer the question, please enter    instructions
your "true" feelings and press RETURN.

There are no restrictions on the amount of data you
can put into an event (except for disk storage
space).

An event does **NOT** correspond to a screen of
information.

An event can contain multiple screens of data.

After presenting one screen of data all you have to
do is erase the screen and start over.

For example I'm going to count to 10 and erase this
screen.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

---

## THIS IS THE END OF THE
## EVENT NODE DATA

Press RETURN to go back to the menu.

Nodes

Type the letter of your choice >
                                    or press SHIFT-RETURN to exit menu.

```
+ a.   Event

  b.   Strategy

  c.   Menu

  d.   Decision

  e.   List

  f.   File
```

(- = not available)                    (+ = previously selected)

Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.

```
STRATEGY NODE                                    information

A STRATEGY node ( [  ] ) represents a grouping of other
nodes into a substrategy for presentation to the student.


The use of a STRATEGY node allows you to see the "big
picture" of a lesson (or portion thereof) without getting
involved in the details of the lesson.

The STRATEGY node also introduces the idea of different
"levels" of strategy.




```

```
                                                  instructions
  Press RETURN to continue.
```

## FOR EXAMPLE

| LEVEL 1 STRATEGY | LEVEL 2 SUBSTRATEGY | LEVEL 3 SUBSTRATEGY |
|---|---|---|
| **A** INTRO | **A** 1ST MAIN IDEA | **A** 1ST SUBPOINT |
| **B** BODY ⇨ | **B** 2ND MAIN IDEA | **B** 2ND SUBPOINT |
| **C** SUM-MARY | **C** 3RD MAIN IDEA | ↗ |

Level 1 strategy shows the structure of the lesson at the highest level. It consists of Event A, followed by Strategy B, and finally Event C. Strategy B is the "big picture" representation for the 3 items at the Level 2 Substrategy.

Strategy C at Level 2 represents the "big picture" for the two Events (A&B) at the Level 3 Substrategy.

---

## FOR EXAMPLE

| LEVEL 1 STRATEGY | LEVEL 2 SUBSTRATEGY | LEVEL 3 SUBSTRATEGY |
|---|---|---|
| **A** INTRO | **A** 1ST MAIN IDEA | **A** 1ST SUBPOINT |
| **B** BODY ⟶⇨ | **B** 2ND MAIN IDEA | **B** 2ND SUBPOINT |
| **C** SUM-MARY | **C** 3RD MAIN IDEA | ↗ |

As you can see, each level of strategy can expand into many different sublevels of strategy (i.e., substrategies).

In this case, STRATEGY node B at Level 1 expanded into EVENT A, EVENT B, and STRATEGY C at level 2 and STRATEGY C at Level 2 expanded into EVENT A and EVENT B at Level 3.

```
THIS IS THE END OF THE
STRATEGY NODE DATA
```

Press RETURN to go back to the menu.


**Nodes**

Type the letter of your choice 〉
                        or press SHIFT-RETURN to exit menu.

```
        + a.   Event

        + b.   Strategy

          c.   Menu

          d.   Decision

          e.   List

          f.   File
```

(- = not available)                    (+ = previously selected)


Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.

34

A MENU node ( ◆ ) allows the ▮STUDENT▮ to select

his/her own lesson path by selecting items from the
screen display showing various choices.  The important
aspect of the MENU node is that the ▮STUDENT▮ choses
the lesson path, not the computer (as in the ▮DECISION▮
node).


In the strategy map, the menu choices appear to the
right of the MENU node.

A ── B  C  D          In this case the student would
                      see a menu containing three
                      choices as represented by the
three EVENT nodes (B, C, and D) on the strategy map.
Remember, the student sees a menu but not the strategy
map.

Press RETURN to continue.

---

For example, a MENU node was displayed to you when you
came into this lesson module on "nodes".  On the screen
it looked like:

            a.  Event
            b.  Strategy
            c.  Menu
            d.  Decision
            e.  List
            f.  File

Some of the features of a MENU node which you, as an
author, can control are:
▮REPETITION▮ Used to control how often a student returns
to the menu to make a selection.  You can have the student
select one item, all items, or any number inbetween.  You
can also have the student continue menu selection until a
certain condition is met (e.g. achieve a certain test
score).

Press RETURN to continue.

For example, a MENU node was displayed to you when you
came into this lesson module on "nodes". On the screen
it looked like:

```
        +  a.  Event
        +  b.  Strategy
           c.  Menu
           d.  Decision
        +  e.  List
           f.  File
```

Some of the features of a MENU node which you, as an
author, can control are:

**HISTORY** Used to show students which items from the
menu have already been selected. This is done with a
"+" sign. For example, according to the menu above,
items a, b, and e have already been selected.

Press RETURN to continue.

---

For example, a MENU node was displayed to you when you
came into this lesson module on "nodes". On the screen
it looked like:

```
           a.  Event
           b.  Strategy
           c.  Menu
           d.  Decision
           e.  List
           f.  File
```

Some of the features of a MENU node which you, as an
author, can control are:

**BYPASS** Used to determine when students can bypass
having to make a menu selection. Options available are
never, always, and conditional (you determine the
condition).

Press RETURN to continue.

36

For example, a MENU node was displayed to you when you came into this lesson module on "nodes". On the screen it looked like:

      a.  Event
   -  b.  Strategy
   -  c.  Menu
   -  d.  Decision
   -  e.  List
   -  f.  File

Some of the features of a MENU node which you, as an author, can control are:

**CONDITIONS** Used to determine under what conditions a student can select a menu item. For example, you may want a student to choose the first item on a menu before any others. In this case the menu would look like the one above. The "-" signs indicate those items unavailable.

Press RETURN to continue.

# THIS IS THE END OF THE MENU NODE DATA

Press RETURN to go back to the menu.

**Nodes**

```
+ a.  Event

+ b.  Strategy

+ c.  Menu

  d.  Decision

  e.  List

  f.  File
```

(- = not available)                    (+ = previously selected)

Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.

---

**DECISION NODE**                                    **information**

A DECISION node (  ◇  ) is similar to a MENU node
except instead of the **student** selecting his/her path
thru the lesson, the **computer** selects the path based
on criteria set up by you, the author.

Like the MENU node, the author defined choices appear to
the right of the DECISION node on the strategy map.

◇A├──┬────┬────┬────┬────┐
    **B**  **C**  **D**  **E**  **F**

Unlike the MENU node, the DECISION nodes (i.e., B thru
F in the above portion of a strategy map) are not
displayed to the student for choosing.

---

                                            **instructions**
  Press RETURN to continue.

Two items you, as an author, can control in the
DECISION mode are the order of presentation of
the nodes and the number of nodes to be presented.


For example, if a DECISION node is a set of 5
questions and you want all 5 questions presented
to the student in sequence, you set the DECISION
node variables to allow this to happen.

---

Press RETURN to continue.         Instructions

---

DECISION NODE

1. Question #1

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

```
DECISION NODE

2. Question #2

     a. 1st response.
     b. 2nd response.
     c. 3rd response.
     d. 4th response.
```

```
DECISION NODE

3. Question #3

     a. 1st response.
     b. 2nd response.
     c. 3rd response.
     d. 4th response.
```

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```
DECISION NODE

4. Question #4

   a. 1st response.
   b. 2nd response.
   c. 3rd response.
   d. 4th response.
```

```
DECISION NODE

5. Question #5

   a. 1st response.
   b. 2nd response.
   c. 3rd response.
   d. 4th response.
```

Now let's say you want to present all 5 questions to
the student but this time you want the questions
presented in random order.  In this case, the student
would see this.

Press RETURN to continue.

DECISION NODE

1. Question #1

   a. 1st response.
   b. 2nd response.
   c. 3rd response.
   d. 4th response.

2. Question #2

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

5. Question #5

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

3. Question #3

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

4. Question #4

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

Now let's say you want to present any 3 of the 5
questions to the student in random order.  In
this case you would see the following.

---

**instructions**

Press RETURN to continue.

---

DECISION NODE

2. Question #2

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

**DECISION NODE**

4. Question #4

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

**DECISION NODE**

5. Question #5

    a. 1st response.
    b. 2nd response.
    c. 3rd response.
    d. 4th response.

**THIS IS THE END OF THE**
**DECISION NODE DATA**

Press RETURN to go back to the menu.

Nodes

Type the letter of your choice 》
                                 or press SHIFT-RETURN to exit menu.

+ a.  Event

+ b.  Strategy

+ c.  Menu

+ d.  Decision

  e.  List

  f.  File

(- = not available)              (+ = previously selected)

Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.

The List node ( >___ ) indicates how many nodes
are to the right of a MENU or DECISION node. A LIST node
is used when the nodes to the right of a MENU or DECISION
node exceed six.

# For Example

If you have a MENU node that looks like

A ⬦ —□ □ □ □ □ □

and you want to add a 7th node to the MENU, your new
map would look like the following:

A ⬦ > B (7)     The purpose of a LIST node is to
                   save space on the strategy map

Press RETURN to continue.

# THIS IS THE END OF THE
# LIST NODE DATA

Press RETURN to go back to the menu.

Nodes

```
+ a.   Event

+ b.   Strategy

+ c.   Menu

+ d.   Decision

+ e.   List

  f.   File
```

(- = not available)                    (+ = previously selected)


Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.


```
FILE NODE                                         information

A FILE node (       ) represents an application outside

the PCD3 courseware.  This application could be another
PCD3 lesson or a program (e.g., game, simulation, word
processing).

When a FILE node is encountered, the student branches
out of the PCD3 lesson, the outside application is
executed, and the student returns to the PCD3 lesson
to the node following the file node in the strategy map.
```

```
                                         instructions
    Press RETURN to continue.
```

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# FOR EXAMPLE

D

E

F

When a student finishes EVENT D, he/she will go to FILE
E and when that is finished will come back to EVENT F.

You will now be temporarily transferred to another
PCD3 lesson outside of this one.

Press RETURN to continue.

---

This is a sample PCD3 lesson that you have branched
to.  After executing this lesson, you will return
to the lesson you came from.

This is only a sample of the FILE node so the next
screen you will see will be the last one in this
lesson.

Press RETURN to continue.

Suppose you've developed
a lesson on US alliances
and another author has
developed a lesson on
NATO.

You could incorporate
this NATO lesson into
your alliance lesson
by using the FILE node
and save yourself a lot
of work.

Press next to go back to the original PCD3 lesson.

Welcome back from your excursion outside this lesson
using the FILE node.

I hope you had a nice trip and appreciate the
usefulness of the FILE node.

Press RETURN to continue.

# THIS IS THE END OF THE FILE NODE DATA

Press RETURN to go back to the menu.

**Nodes**
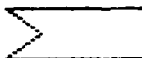
Type the letter of your choice ❭
or press SHIFT-RETURN to exit menu.

+ a.   Event

+ b.   Strategy

+ c.   Menu

+ d.   Decision

+ e.   List

+ f.   File

(- = not available)                    (+ = previously selected)

Note:  Choose the node you want to look at by pressing one
of the a thru f keys.  To exit this menu and continue on
with Courseware Strategy press SHIFT-RETURN.

## SUMMARY OF NODE DATA

| Node Name | Node Function | Node Symbol |
|-----------|---------------|-------------|
| EVENT | CONTAINS INSTRUCTIONAL MATERIALS | ■ |
| STRATEGY | SHOWS LESSON STRUCTURE | □ |
| MENU | INDEX OF NODES FOR STUDENT SELECTION | ◆ |
| DECISION | INDEX OF NODES FOR COMPUTER SELECTION | ◇ |
| LIST | REPRESENTS GROUP OF NODES IN A MENU OR DECISION | ⬦ |
| FILE | REPRESENTS APPLICATION EXTERNAL TO PCD3 LESSON | ⬚ |

Press RETURN to continue.

---

To create your PCD3 lesson containing your strategy map and the content off all your nodes you use the

## STRATEGY EDITOR

This Editor is very user friendly and is thoroughly described in the PCD3 Authoring System User Manual.

Press RETURN to continue.

## LESSON PATHS

We will now look at the various paths a student can follow when taking a PCD3 lesson.

These paths are:

1. LINEAR

2. BRANCHING

3. LOOPING

4. BACKFLOW

---

## LINEAR PATH

A
B
C

In a Linear path, the student flows directly from EVENT A, to EVENT B, to EVENT C.  There are no optional routes.

54
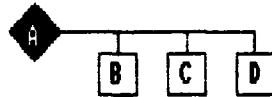
### BRANCHING PATH

In a Branching path the student selects the path he/she will follow thru the lesson.

For example, when the student gets to MENU node A, he/she can select which STRATEGY node (i.e., B, C, or D) to follow.

Press RETURN to continue.

### LOOPING PATH
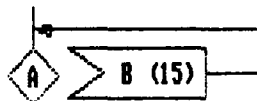
Looping occurs when you come back thru a portion of the Strategy Map more than once.

For example, LIST node B could be a series of 15 test questions which DECISION node A keeps going back to in selecting questions for student presentation.

Press RETURN to continue.

## BACKFLOW

Normally Strategy Map nodes are processed top to bottom and left to right (according to the MENU and DISPLAY node settings).

However, the BACKFLOW feature can be used to allow the student to flow "up" a strategy map (i.e., move in the opposite direction towards the beginning of the lesson).

For example, you will now be shown three screens in succession and then you will have the option on the fourth screen to back up to screen 1, 2, or 3.

**Instructions**

Press RETURN to continue.

# Screen #1

**Instructions**
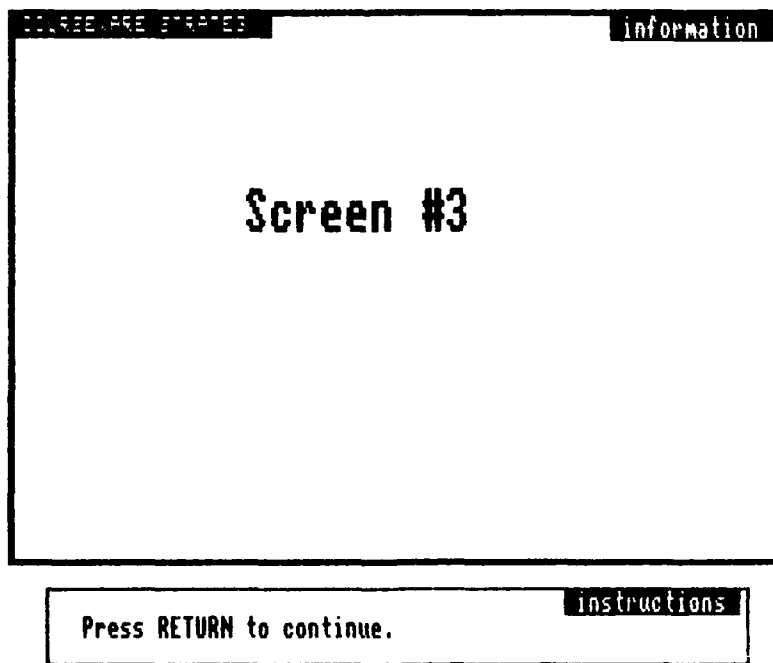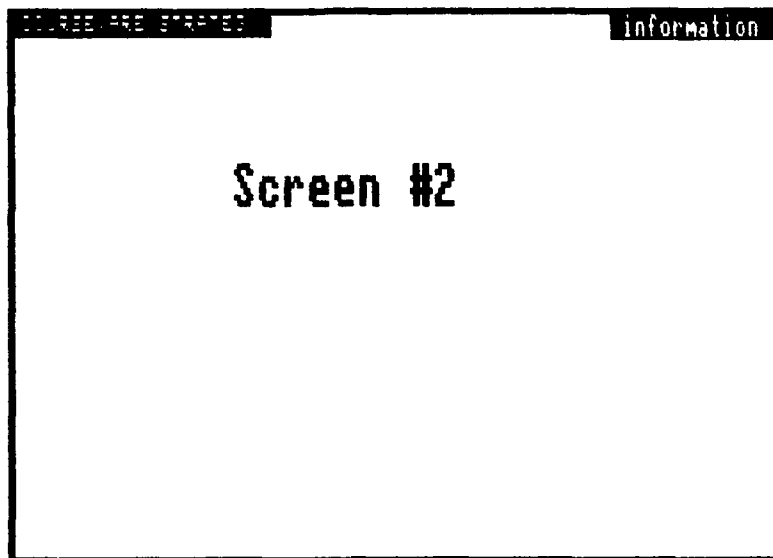
Press RETURN to continue.

## Screen #2

Press RETURN to continue.

## Screen #3

Press RETURN to continue.

information

Let's say screens 1, 2, and 3 contained information
on topics 1, 2, and 3 respectively and before you
ask the student questions concerning topics 1, 2, or
3 you are going to allow the student to go back and
review the topics of his/her choosing.

By setting up the proper BACKFLOW variables and by
following the instructions in the box below, you
could do this.

```
PRESS 1 FOR SCREEN 1                        instructions
PRESS 2 FOR SCREEN 2
PRESS 3 FOR SCREEN 3     PRESS RETURN TO CONTINUE
```

information

# Screen #3

Press RETURN to continue.                    instructions

Let's say screens 1, 2, and 3 contained information
on topics 1, 2, and 3 respectively and before you
ask the student questions concerning topics 1, 2, or
3 you are going to allow the student to go back and
review the topics of his/her choosing.

By setting up the proper BACKFLOW variables and by
following the instructions in the box below, you
could do this.

```
PRESS 1 FOR SCREEN 1                              instructions
PRESS 2 FOR SCREEN 2
PRESS 3 FOR SCREEN 3      PRESS RETURN TO CONTINUE
```

To temporarily exit from the normal lesson path

use the

# RESTART

function

```
                                                  instructions
Press RETURN to continue.
```

RESTART allows the student to leave the lesson at Event
or Menu nodes specified by the author and then return
to these designated nodes at a later time.

Use the DATA key (i.e., F9 key) from an Event or Menu
node to set the RESTART flag.

If a student exits from an Event or Menu node (via
pressing CTRL-BREAK) that has the RESTART flag set, the
computer will create a file with the same name as the
current lesson file with an .STU extension.  When the
student comes back to the lesson, he/she will start at
the appropriate Event or Menu as designated by the
information in the .STU file.

Press RETURN to continue.

If a student comes back into a lesson via RESTART, you
need to set the CLEAR PREVIOUS RESTART flag in a
subsequent Event or Menu to clear out the old .STU data.
This will prevent the student from coming back to this
old restart point if any further RESTART flags are used
in the lesson.

There are no RESTART flags used in this lesson.  You
can exit from this lesson at any time by pressing
CTRL-BREAK but when you come back in you will start over
at the beginning of the lesson.

For more information about the RESTART function see
pages 4-41 and 4-64 in the PCD3 user manual.

Press RETURN to continue.

# This is the end of the COURSEWARE STRATEGY section of this lesson.

# You will now go back to the main menu.

Note: For more information about courseware strategy, refer to Chapter 4 of the PCD3 user manual.

---

Press RETURN to continue.

**Nodes**

Type the letter of your choice >
                                   or press SHIFT-RETURN to exit menu.

```
+---------------------------------------------------------------+
|                                                               |
|          + a.   COURSEWARE STRATEGY                            |
|                                                               |
|            b.   TEXT                                          |
|                                                               |
|            c.   GRAPHICS                                      |
|                                                               |
|            d.   QUERIES                                       |
|                                                               |
|            e.   CONTENT                                       |
|                                                               |
|            f.   VARIABLES                                     |
|                                                               |
+---------------------------------------------------------------+
```
(- = not available)                    (+ = previously selected)

> Note:  To make a selection press one of the a thru f keys.
>        To exit the menu and go to the end of the lesson
>        press SHIFT-RETURN.

You have a very powerful capability in PCD3 for
entering and editing text.  This capability is
covered in Chapter 5 of the User's Manual and will not
be covered here.

What will be covered in this lesson are some
ATTRIBUTES and ENHANCEMENTS of the text.

<u>ATTRIBUTES</u>                    <u>ENHANCEMENTS</u>

Mode                                 Overstrike
Fonts                                Color
Size                                 Animation
Direction                            Alternate Characters
Rotation

Press RETURN to continue.

# Mode
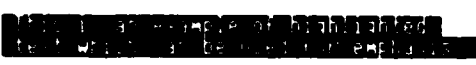
1. Write - Allows you to write normal text such as this.

2. Rewrite - Allows you to write over text instead of
   deleting the old text and re-entering the
   new.

   Example:  REWRITING THIS TEXT  sentence which is
   being rewritten in all upper case.

3. Erase - Allows you to write on top of an object and
   to create blinking objects.

   Example:              ▼         This sentence will blink
                                   on this screen but not
                                   on a printout of this
                                   screen.

Press RETURN to continue.                    instructions

# Mode (Continued)

4. Inverse - This allows you to highlight text.

   Example:  This is an example of highlighted
             text which will be used for emphasis.

   This is the end of text modes so now let's look
   at text fonts.

Press RETURN to continue.                    instructions

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# TEXT FONTS

There are five fonts that are available with PCD3.
They are:

1. Standard - This is text in the standard font.

2. TINY - THIS IS TEXT IN THE TINY FONT.

3. **HEAVY - THIS IS TEXT IN THE HEAVY FONT.**

4. Thin -

5. Italics -

I cannot show you a sample of the last two fonts.
Besides the standard font, which is always available
to you, only two of the remaining four fonts can be
used in a lesson.

Press RETURN to continue.

---

# TEXT SIZE

You can use a text font in one of two sizes:  normal
or bold.

Standard normal or    **Standard Bold**

TINY NORMAL OR    TINY BOLD

**HEAVY NORMAL OR    HEAVY BOLD**

Once again I am not able to show you thin normal and
bold or italics normal and bold.  Sorry.

Press RETURN to continue.

# TEXT SIZE

Of course you can combine inverse, fonts, and size
to get the following:

Standard Normal or      STANDARD BOLD

Tiny Normal or          TINY BOLD

HEAVY NORMAL or      HEAVY BOLD

Press RETURN to continue.

---

# TEXT DIRECTION

Text can be written in one of four directions.

1. Right Direction.

   This is text written in the right direction.

2. Left Direction.

   .noitcerid tfel eht ni nettirw txet si sihT
   ?siht esu ot tnaw reve uoy dluow nehW
   gnitirw erew uoy fi ti esu dluoc uoy sseug I
   "able was I ere I saw elba"

Press RETURN to continue.

# Text Direction (con't)

3. Down Direction    4. Up Direction

```
T
h
i
s

i
s

d
o
w
n
.
```

```
.
P
u

S
i

S
i
h
T
```

# TEXT ROTATION

Text can be rotated in one of four different directions
while it is being written.

1.  0 Degrees.

    This is text rotated 0 degrees.

2.  90 Degrees.

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# TEXT ROTATION (con't)

3.  180 Degrees.

    ˙sǝǝɹƃǝp 081 ɟo ʇxǝʇ sı sıɥʇ

4.  270 Degrees.

    [rotated text characters]

    [rotated text characters]

---

# NOW THAT WE'VE LOOKED AT TEXT ATTRIBUTES, LET'S GO ON AND LOOK AT THE TEXT ENHANCEMENTS.

# TEXT OVERSTRIKE

Text overstrike allows you to underline or cross out text without deleting the text.

This is an example of text underline.

This is an example of text overstrike.

Press RETURN to continue.

# TEXT COLOR

Since this is not a color monitor I can't show you an example of text in different colors.

If this was a color monitor, text could also be written in red, blue, or green or any combination thereof.

Press RETURN to continue.

# TEXT ANIMATION

Text can be animated to a certain degree.  For example:

I'm so happy I could  jump  for joy.

Watch the cow go in the barn. ————┐
                                   │
                                   ▼
OLD
BARN ——▶  ┌──────────┐
          │  MOO-COW │
          └──────────┘

Don't forget to shut the door!!!!!!!!!!!!!!!!

NOTE :  ANIMATION CANNOT BE SEEN ON THE PRINTED PRODUCT

Press RETURN to continue.

---

# This is the end of the TEXT section of this lesson.

# You will now go back to the main menu.

Note:  For more information about the text features,
refer to Chapter 5 of the PCD3 user manual.

Press RETURN to continue.

**Nodes**

Type the letter of your choice >
                                or press SHIFT-RETURN to exit menu.

```
+ a.   COURSEWARE STRATEGY

+ b.   TEXT

  c.   GRAPHICS

  d.   QUERIES

  e.   CONTENT

  f.   VARIABLES
```

(- = not available)              (+ = previously selected)

Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.

---

Information

PCD3 has a graphics entry and editing capability.

This graphics capability, which is part of the
PCD3 Event Editor, is discussed in detail in
Chapter 6 of the PCD3 user manual.

This section of the lesson will discuss the
basic objects used to create illustrations (i.e.,
box, line, vector, arc, ellipse, and circle) and
some of the editing functions you can apply to
these objects.

---

Instructions

Press RETURN to continue.

# The BOX Function

The BOX function allows you to draw a square or
rectangle by specifying two corners of the object.

For example:
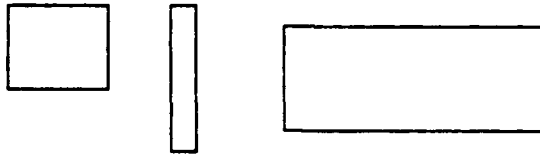
Besides specifying the two corners of the box you
also specify the thickness of the border.

For example:  THICKNESS OF 5, 18, 25, -8 AND FILL.

Press RETURN to continue.

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The thickness of a box can be +, -, or f (for fill).
A "+" thickness plots the border of the box outward
while a "-" thickness plots the border inward.

For example:

All the boxes above had the same corner points when
plotted.  The thickness of the first box is +6, the
thickness of the second box is -6, and the third box
has a thickness of filled.

Press RETURN to continue.

Once you have created a box you can use the edit
functions to change its location, size (both
height and width), and the thickness of the box.


We will now look at the line function.

Press RETURN to continue.

# The LINE Function

You can enter a line segment or combination of segments via the line function. Select the two end points and the computer will connect the dots.

For example:

Press RETURN to continue.

---

Once you draw a line you can go back to it and use the edit function to change the length of the line (shorten or lengthen) it or change the angle of the line by changing the location of one of its end points.

We will now look at the Vector function.

Press RETURN to continue.

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# The VECTOR Function

Vectors can be created by entering the
tail location, the head location, and
the size of the vector head.

For example:

Press RETURN to continue.

---
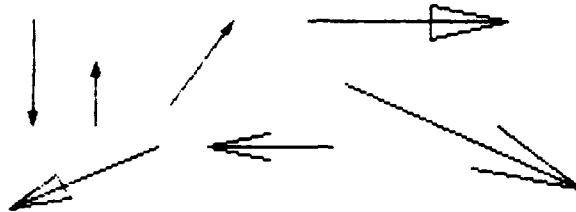
The head of a vector can vary in size and be open or
closed.

Use -1 to -255 for an <u>open</u> arrowhead.

Use 1 to 255 for a <u>closed</u> arrowhead.

Note:  Default is a closed arrowhead of size 10.

For example:

| Head size = | 10 | -10 | 30 | -30 |
|---|---|---|---|---|

Press RETURN to continue.

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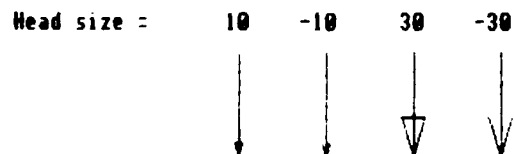
Once you have entered a vector
you can edit it and change its
head size, length, and direction.

Now we will look at the arc function.

Press RETURN to continue.

# The ARC Function

To enter an arc you specify the start point, any other
point on the arc, and the end point.

For example:

Press RETURN to continue.

Once you enter an arc you can edit it by changing
the location of the arc on the screen or change the
shape of the arc by changing any of its three
definition points.

Original          Original arc          Original arc with new
arc               moved                 midpoint
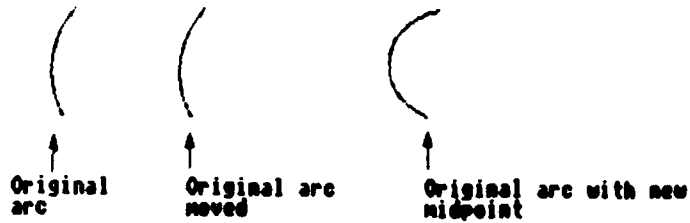
We will now look
at the Ellipse
function.

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# The ELLIPSE Function

An Ellipse is drawn by specifying three points--the center, the end of the horizontal axis, and any other point on the ellipse.

For example:

**Press RETURN to continue.**

---

Once you enter an ellipse, it can be moved around on the screen via the editor.

I moved the ellipse down here for this message--we are now going to look at the Circle function.

**Press RETURN to continue.**

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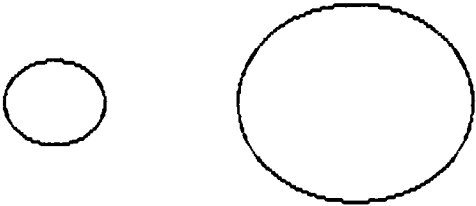
# The CIRCLE Function

To create a circle all you have to do is specify
the center and a point on the radius.

For example:

Press RETURN to continue.

---
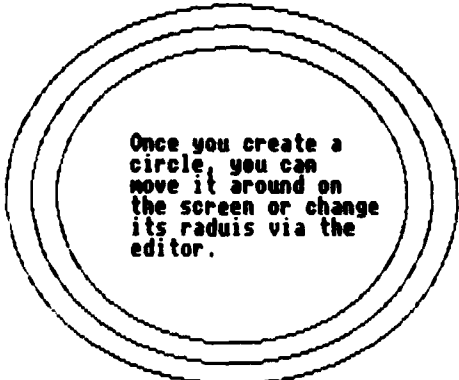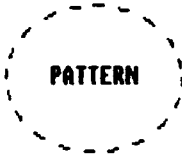
Once you create a
circle, you can
move it around on
the screen or change
its raduis via the
editor.
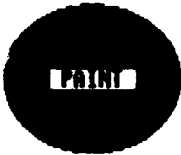
Press RETURN to continue.

Now that we've looked at the basic objects used
to create illustrations and some editing capabilities
for these objects let's look at the PATTERN and PAINT
functions you can use with graphics.

```
      ( PATTERN )          ( PAINT )
```

Press RETURN to continue.

---
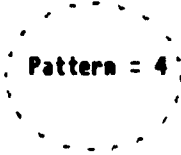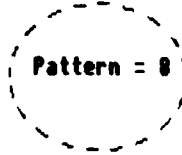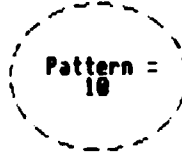
# PATTERN

Pattern will let you create objects with open
borders.  The default is a solid border made up
of groups of 16 dots.  You use pattern to specify
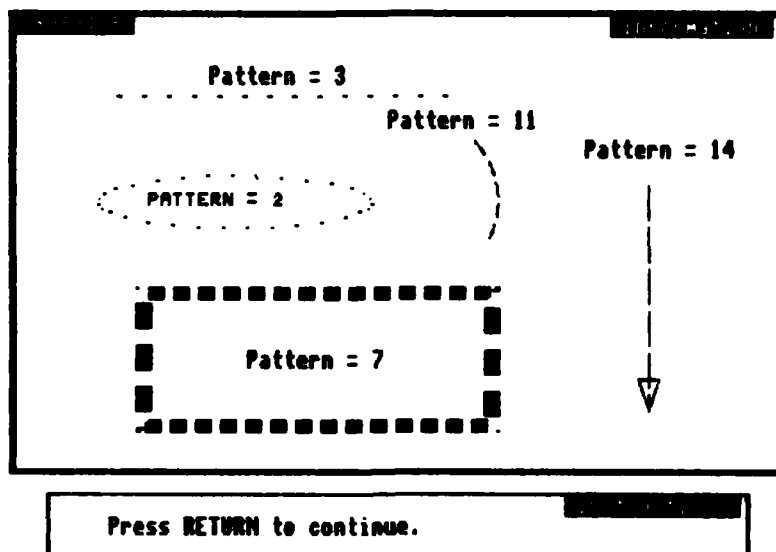how many of the 16 dots to turn on.  The remaining
dots will then be turned off.

```
( Pattern = 4 )    ( Pattern = 8 )    ( Pattern =
                                            10 )
```

Press RETURN to continue.

Pattern = 3

Pattern = 11

Pattern = 14

PATTERN = 2

Pattern = 7

Press RETURN to continue.



# PAINT

The PAINT function allows you to shade the inside of an object.
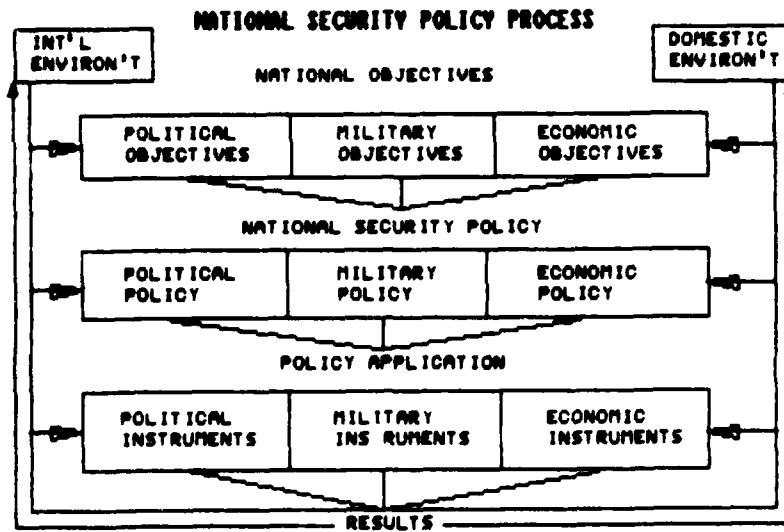
Press RETURN to continue.
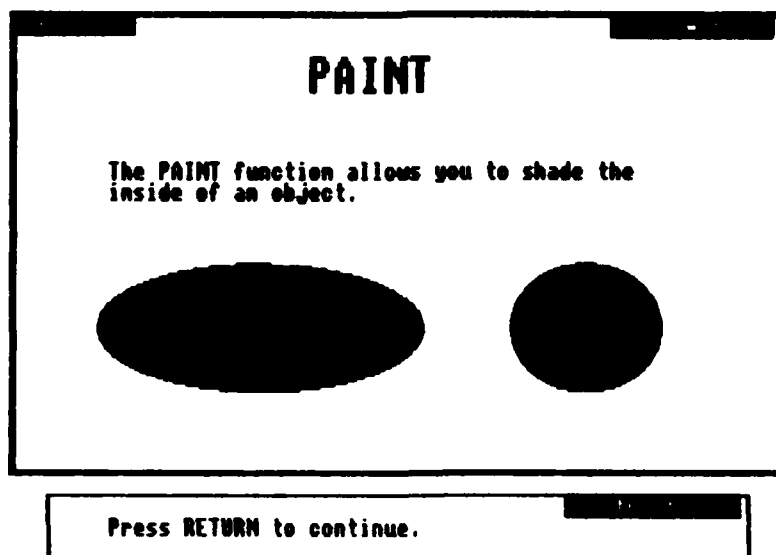
Suppose you have a map of Europe and you want to talk about Spain.

You could use the Paint function to emphasize the country.



A LOOK AT SOME
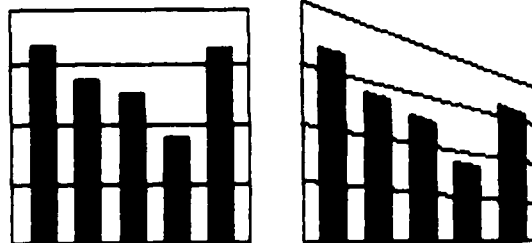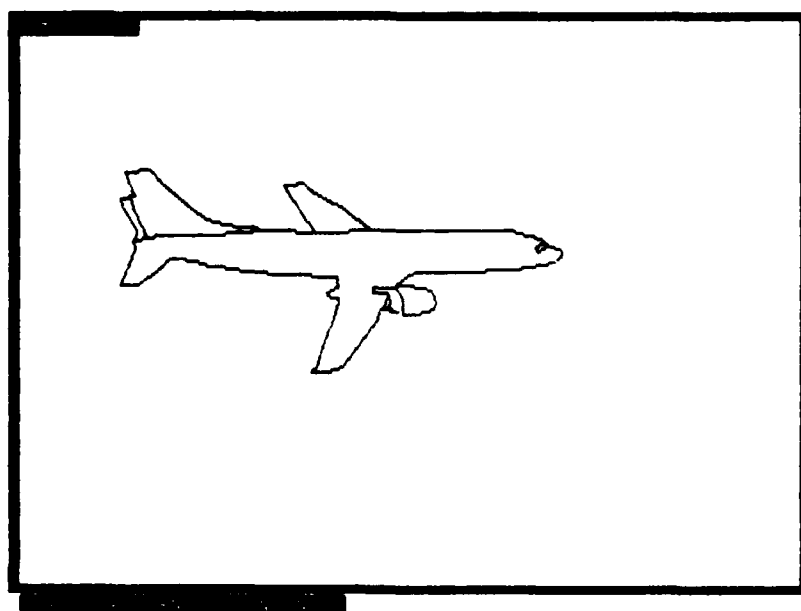GRAPHIC EXAMPLES
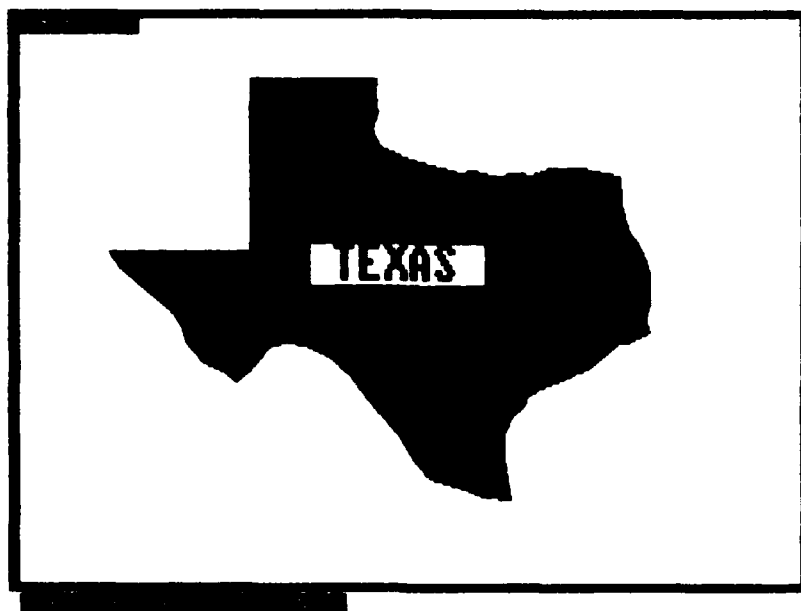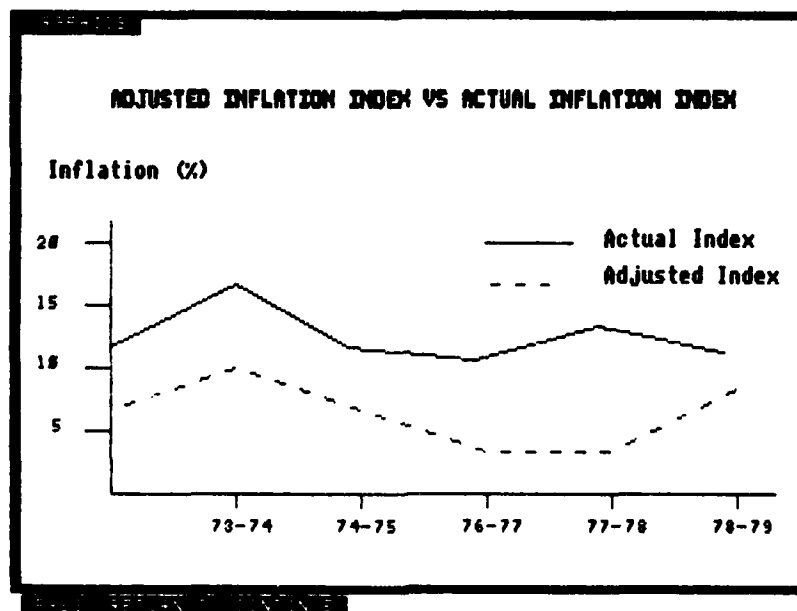
Press RETURN to continue.

NATIONAL SECURITY POLICY PROCESS

| INT'L ENVIRON'T | | DOMESTIC ENVIRON'T |
|---|---|---|

NATIONAL OBJECTIVES

| POLITICAL OBJECTIVES | MILITARY OBJECTIVES | ECONOMIC OBJECTIVES |
|---|---|---|

NATIONAL SECURITY POLICY

| POLITICAL POLICY | MILITARY POLICY | ECONOMIC POLICY |
|---|---|---|

POLICY APPLICATION

| POLITICAL INSTRUMENTS | MILITARY INSTRUMENTS | ECONOMIC INSTRUMENTS |
|---|---|---|

——— RESULTS ———

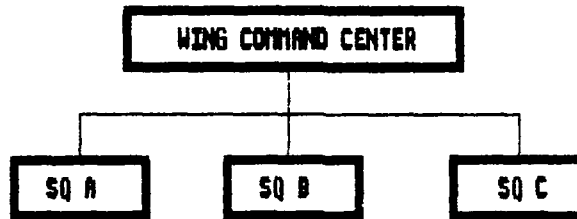Press RETURN to continue.     Source: National Security Policy and Process, 1987 (3:9).



PERSPECTIVE

# COMMAND AND CONTROL

Centralized Direction
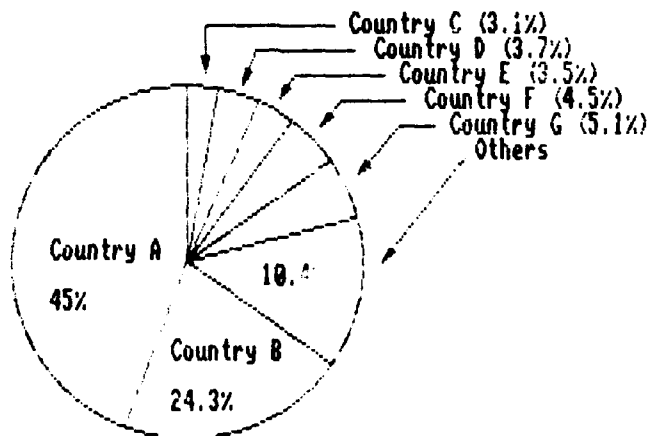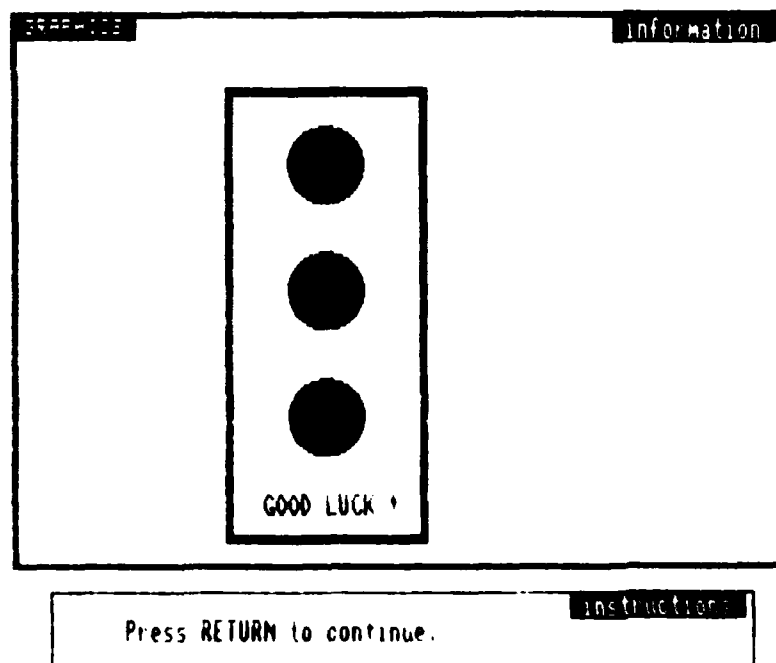
```
            WING COMMAND CENTER
         ┌─────────┼─────────┐
      ┌──────┐  ┌──────┐  ┌──────┐
      │ SQ A │  │ SQ B │  │ SQ C │
      └──────┘  └──────┘  └──────┘
```

Decentralized Execution

---

WORLD COMMERCIAL JET AIRPLANE MARKET

Country C (3.1%)
Country D (3.7%)
Country E (3.5%)
Country F (4.5%)
Country G (5.1%)
Others

Country A

45%

18.4

Country B

24.3%

1952-1985
$241.7 Billion

85

instructions

GOOD LUCK !

instructions

Press RETURN to continue.
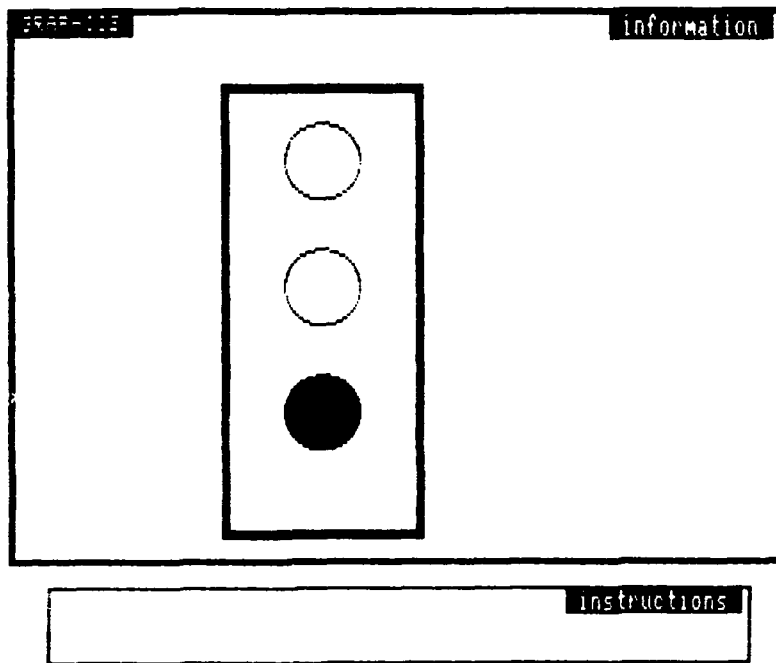
# This concludes the GRAPHICS section of the lesson.

# We will now go back to the main menu.

Note: For more information about the graphics
feature, refer to Chapter 6 of the PCD3 user
manual.

Press RETURN to go back to the menu.

Type the letter of your choice 〉
                              or press SHIFT-RETURN to exit menu.

```
  ·          + a.   COURSEWARE STRATEGY

             + b.   TEXT

             + c.   GRAPHICS

               d.   QUERIES

               e.   CONTENT

               f.   VARIABLES
```

(- = not available)                    (+ = previously selected)

Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.

```
QUERIES                                          100
```

This section looks at the QUERY features of PCD3.

The QUERY feature allows the student to interact
with the PCD3 lesson.

Basically, a query is a question which asks for
a student response.  You could use a query by
itself during a lesson to check the student's
progress in learning an objective or you could
use a series of queries for a test at the end
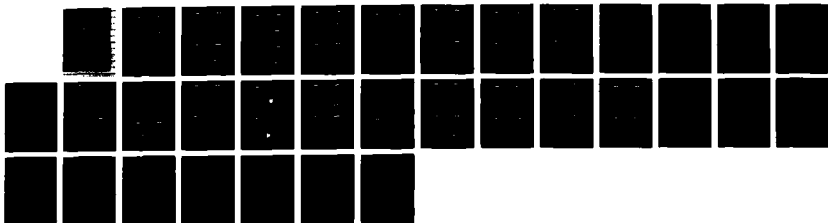of your lesson.

```
Press RETURN to continue
```

MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A

We will now look at some of the variables you can
set when you build a query.

LENGTH of the student response can be set from one
to 120 characters.

For example, the following question has the length set
at 6.  Enter Dallas, Houston, and Austin in that order
to see what happens.

What is the capital of Texas?
>

Press RETURN after answering the question.

We will now look at some of the variables you can
set when you build a query.

LENGTH of the student response can be set from one
to 120 characters.

For example, the following question has the length set
at 6.  Enter Dallas, Houston, and Austin in that order
to see what happens.

What is the capital of Texas?
> Dallas
Not quite.  Home of the Cowboys but not
the capital.  Please re-enter.

Press RETURN after answering the question.

We will now look at some of the variables you can
set when you build a query.

LENGTH of the student response can be set from one
to 120 characters.


For example, the following question has the length set
at 6. Enter Dallas, Houston, and Austin in that order
to see what happens.

    What is the capital of Texas?
    > Housto
    Please re-enter.

Press RETURN after answering the question.

---

We will now look at some of the variables you can
set when you build a query.

LENGTH of the student response can be set from one
to 120 characters.


For example, the following question has the length set
at 6. Enter Dallas, Houston, and Austin in that order
to see what happens.

    What is the capital of Texas?
       Austin
    Very good!  That is correct.


Notice that you could enter "Housto" but not "Houston".

Press RETURN to continue.

You can designate the response prompt you want to use
(i.e., you don't have to use the ">" symbol for the
prompt) and you can make the response invisible.

For example:

What is the password which will allow you to
escape this question? (Hint: Try anything first)

Answer→

Press RETURN after answering the question.

Information

You can designate the response prompt you want to use
(i.e., you don't have to use the ">" symbol for the
prompt) and you can make the response invisible.

For example:

What is the password which will allow you to
escape this question? (Hint: Try anything first)

Answer→

Don't tell anyone but the password is BlueStrike.
Please re-enter.

Instructions
Press RETURN after answering the question.

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You can designate the response prompt you want to use
(i.e., you don't have to use the ")" symbol for the
prompt) and you can make the response invisible.

For example:

   What is the password which will allow you to
   escape this question? (Hint: Try anything first)


   Correct! Very good. Don't forget to keep the
   password under wraps. Thanks from the data masked
   force.
   I HOPED YOU LIKED THE NEW ANSWER PROMPT AND THE
   INVISIBLE ANSWER FEATURES.

Press RETURN to continue.

Another feature of the query is leaving an incorrect
student response on the screen while he/she tries again.

For example:

   I'm thinking of a number between 1 and 10.  What
   is it?

   Answer+ 4

   Please try again.

Press RETURN after answering.  Use
BACKSPACE key to erase old answer before trying again.

Another feature of the query is leaving an incorrect
student response on the screen while he/she tries again.

For example:

I'm thinking of a number between 1 and 10.   What
is it?

Answer→ 6

Congratulations.   You got it.

Press RETURN after answering.   Use
BACKSPACE key to erase old answer before trying again.

93

You've already seen length used to control the number
of characters allowed in the student response.

You can also use length to automatically initiate the
judging of the student's response instead of waiting
for the student to press RETURN to start judging.

For example, in the following multiple choice question,
judging starts as soon as a letter is pressed.

As of 30 Sep 85 what percent of the USAF total
active-duty strength was stationed outside CONUS?

a.  14%        Answer→ a
b.  18%
c.  22%        Incorrect. Please try again.
d.  26%

instructions

You've already seen length used to control the number
of characters allowed in the student response.

You can also use length to automatically initiate the
judging of the student's response instead of waiting
for the student to press RETURN to start judging.

For example, in the following multiple choice question,
judging starts as soon as a letter is pressed.

As of 30 Sep 85 what percent of the USAF total
active-duty strength was stationed outside CONUS?

a.  14%        Answer→ c
b.  18%
c.  22%        Right on!!  You win a PCS to
d.  26%        Guam for answering correctly.
               We will notify MPC right away.

instructions

94

Normally a student can have as much time as he/she wants
to answer a query.  If you want the student to answer
in a specific amount of time you can set a timer.

For example:

    You have 120 seconds to list the three state
    capitals that have National Football League (NFL)
    teams.  If you fail to answer properly in the
    time limit, your TV football watching privileges
    are revoked for one year.  Good luck !!!!!!!

    Answer→ denver atlanta buffalo

    Sorry.  You might want to sell your TV.
    The correct answer is Denver, Indianapolis,
    and Atlanta.

Enter the three cities with a space
between them and press RETURN.

Spelling and capitalization are also controlled by
the PCD3 courseware author.

For example, the following question has both the
spelling and capitalization features turned "off".

  Name the President of the United States who was
  elected in both 1980 and 1984.

  (Note:  ronald Raygun, runold regin, runald
  ragin, etc. will be judged correct in this
  question)

  Answer→ runald raygun

  Excellent.  Your political astuteness is to be
  commended.

Press RETURN after answering.

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Now let's try the same question with spelling and
capitalization turned "on".


Name the President of the United States who was
elected in both 1980 and 1984.

(Note:  ronald Raygun, runold regin, runald
ragin, ronald reagan, etc. will be judged
incorrect in this question)

Answer→ ronald reagan

Please re-enter.

Press RETURN after answering.

Now let's try the same question with spelling and
capitalization turned "on".


Name the President of the United States who was
elected in both 1980 and 1984.

(Note:  ronald Raygun, runold regin, runald
ragin, ronald reagan, etc. will be judged
incorrect in this question)

Answer→ Ronald Reagan

Excellent.  Your political astuteness is to be
commended.

Press RETURN after answering.

You can use the spelling feature to create matching questions.

For example, match the city (col 1) with its air force base (col 2). Note: There are more bases than cities. You have 3 tries to get it right.

<u>Col 1</u>                    <u>Col 2</u>

1. Abilene, TX          a. Griffiss AFB
2. Ogden, UT            b. Francis E. Warren AFB
3. Cheyenne, WY         c. March AFB
4. Sacramento, CA       d. Dyess AFB
5. Rome, NY             e. Grissom AFB
6. Peru, IN             f. Mather AFB
                        g. Hill AFB
Answer→ 1d 2b 3g 4f 5a 6e

Incorrect. Please try again.

Enter answer in following format:
1a 2b 3c 4d 5e 6f (press RETURN).

---

You can use the spelling feature to create matching questions.

For example, match the city (col 1) with its air force base (col 2). Note: There are more bases than cities. You have 3 tries to get it right.

<u>Col 1</u>                    <u>Col 2</u>

1. Abilene, TX          a. Griffiss AFB
2. Ogden, UT            b. Francis E. Warren AFB
3. Cheyenne, WY         c. March AFB
4. Sacramento, CA       d. Dyess AFB
5. Rome, NY             e. Grissom AFB
6. Peru, IN             f. Mather AFB
                        g. Hill AFB
Answer→ 1d 2g 3b 4f 5a 6e

Wow !!!! A student of military geography no doubt.

Enter answer in following format:
1a 2b 3c 4d 5e 6f (press RETURN).

A final query item to discuss is the use of the update
function for student feedback. You've already seen
feedback (in the form of a few lines of text) as a
result of answering previous questions.

However, feedback can be more than a few lines of text.

Also, feedback can be left on the screen and not erased.

Let's go back and look at Texas and the area of a circle.

---

Press RETURN to contine.

---

The capital of Texas is:

    a.  Dallas
    b.  Houston              Answer+
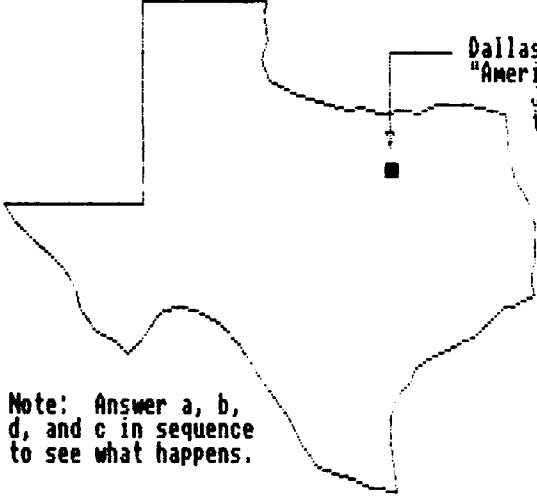    c.  Austin
    d.  San Antonio

Note: Answer a, b,
d, and c in sequence
to see what happens.

---

The capital of Texas is:

a. Dallas
b. Houston          Answer→ _
c. Austin
d. San Antonio

Dallas is home to
"America's" team &
J.R. but it is not
the capital.

Note: Answer a, b,
d, and c in sequence
to see what happens.

---

The capital of Texas is:

a. Dallas
b. Houston          Answer→
c. Austin
d. San Antonio

Dallas is home to
"America's" team &
J.R. but it is not
the capital.
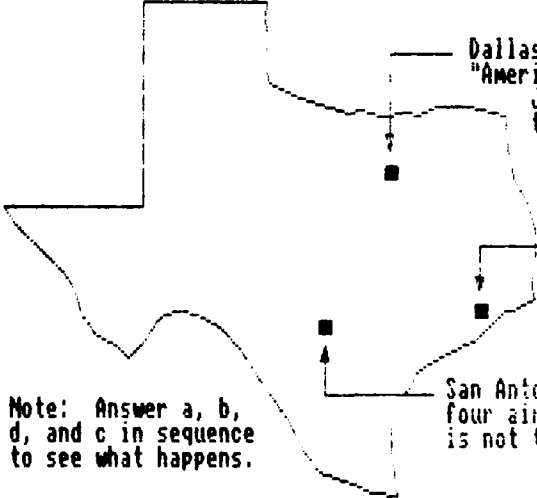
Houston is the
largest city in
Texas but it's
not the capital.

San Antonio is home to
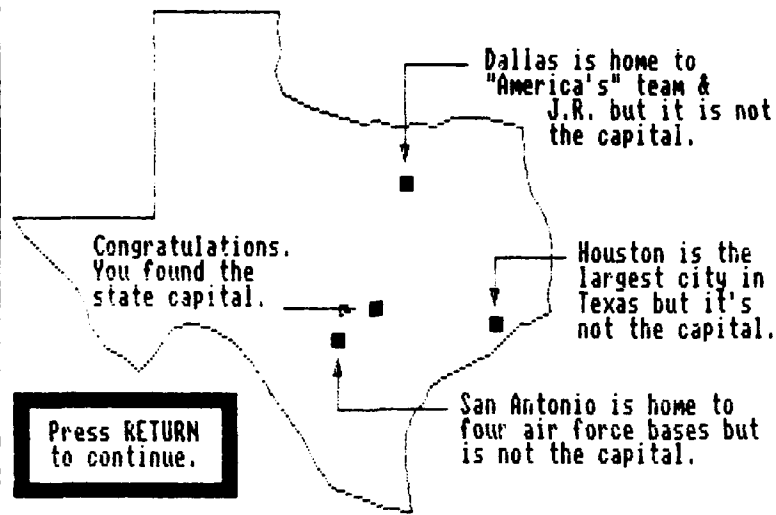four air force bases but
is not the capital.

Note: Answer a, b,
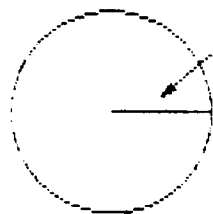d, and c in sequence
to see what happens.

The capital of Texas is:

a. Dallas
b. Houston                    c
c. Austin
d. San Antonio

Dallas is home to
"America's" team &
J.R. but it is not
the capital.

Congratulations.
You found the
state capital.

Houston is the
largest city in
Texas but it's
not the capital.

**Press RETURN
to continue.**

San Antonio is home to
four air force bases but
is not the capital.

---

radius = 3 inches.

The area of the above circle is:

a. 28.27 square inches
b. 26.19 square inches        Answer→ _
c. 30.62 square inches
d. 29.14 square inches

Note: Answer b, c, d,
and a in sequence to
see what happens.

radius = 3 inches.

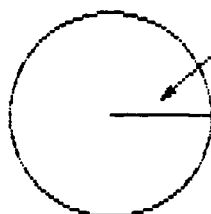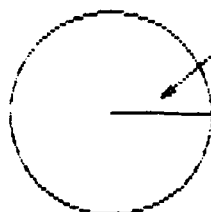The area of the above circle is:

a.  28.27 square inches
b.  26.19 square inches        Answer+
c.  30.62 square inches
d.  29.14 square inches

Hint:  Area = $\pi r^2$

$\pi$ = 3.1416

Note:  Answer b, c, d,
and a in sequence to
see what happens.

---

radius = 3 inches.

The area of the above circle is:

a.  28.27 square inches
b.  26.19 square inches        Answer+ a
c.  30.62 square inches
d.  29.14 square inches        Correct.  Way to work
                               that formula !!!!!

Hint:  Area = $\pi r^2$        Note:  Answer b, c, d,
                               and a in sequence to
$\pi$ = 3.1416                 see what happens.

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radius = 3 inches.

The area of the above circle is:
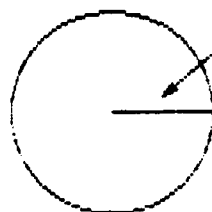
a. 28.27 square inches
b. 26.19 square inches
c. 30.62 square inches
d. 29.14 square inches

a

Correct. Way to work
that formula !!!!!

Hint: Area = $\pi r^2$

$\pi$ = 3.1416

Press RETURN
to continue.

---

# This concludes the QUERY section of this lesson.

# You will now go back to the main menu.

Note: For more information about the query
feature, refer to Chapter 7 of the PCD3 user
manual.

instructions

Press RETURN to go back to main menu.

**Modes**

Type the letter of your choice **)**

or press SHIFT-RETURN to exit menu.

```
+a.  COURSEWARE STRATEGY

+b.  TEXT

+c.  GRAPHICS

+d.  QUERIES

 e.  CONTENT

 f.  VARIABLES
```

(- = not available)                    (+ = previously selected)

Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.

---

**information**

One feature of PCD3 which is very helpful is
the CONTENT BASE.

The CONTENT BASE, which you as an author create,
is like a library of data.  It can consist of test
questions, individual graphic items, complex
illustrations, textual information, or whatever
you desire.

Once you put this information in your library (i.e.,
the CONTENT BASE) you can "withdraw" this data at
any time and use it anywhere in your lesson.  This
allows you to create the data once and then use it
over and over.  This feature is also handy in updating
your lesson.  If a drawing you use 10 times in a lesson
needs updating, all you have to do is update it once
in the CONTENT BASE and this updated drawing will now
be used in the 10 areas of your lesson.

**instructions**

Press RETURN to continue.

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For example, the two boxes on this screen (i.e., the "information" box and the "instruction" box) were drawn once and put into the CONTENT BASE.

I then used these boxes over and over again in this lesson by just calling them in from the CONTENT BASE.

Press RETURN to continue.

This map was drawn once and put in the CONTENT BASE so now it can be used many times.

For example . . . .

Press RETURN to continue.

I could have this
section of the lesson
about France

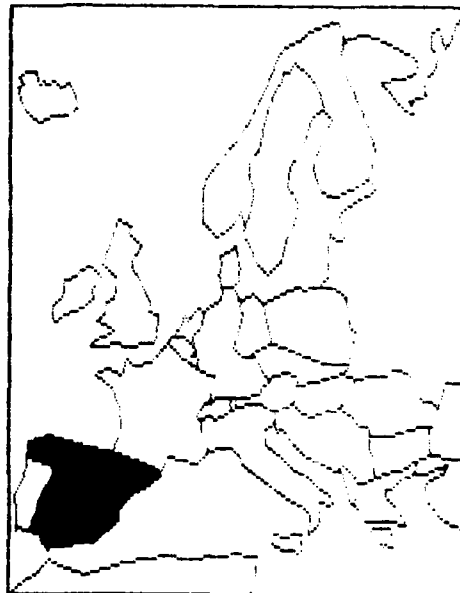while . . .

Press RETURN to continue.



Somewhere else in
the lesson I could
have a section on
Spain.

Press RETURN to continue.

When you first come into PCD3 you see the following
menu:

```
┌──────────────────┐
│     CONTENT      │
└──────────────────┘

┌──────────────────┐
│     STRATEGY     │
└──────────────────┘
```

To get to the CONTENT BASE you would enter "c"
and press RETURN. Once you enter the CONTENT BASE
just follow the instructions (see page 3-50 in the
user manual for more information on the CONTENT BASE).

Press RETURN to continue.

# This concludes the CONTENT BASE portion of this lesson.

# You will now go back to the main menu.

Press RETURN to go back to the menu.

**Nodes**

Type the letter of your choice **>**

or press SHIFT-RETURN to exit menu.

```
        + a.   COURSEWARE STRATEGY

        + b.   TEXT

        + c.   GRAPHICS

        + d.   QUERIES

        + e.   CONTENT

          f.   VARIABLES
```

(- = not available)                 (+ = previously selected)

Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.

```
| VARIABLES |                              information |
|                                                      |
|   As an author you can use variables, either system  |
|   defined variables or ones you create, to tailor    |
|   your lesson for each student.                      |
|                                                      |
|                                                      |
|   Variables can be used to keep track of such things |
|   as a student's name, the number of times he/she    |
|   tries to answer a question, the time it takes to   |
|   answer a question, and a student's test score.     |
```

```
|                                    instructions |
|   Press RETURN to continue.                     |
```

For example, you could create a variable to keep
track of the student's name.


    Hi.  What is your name?

        Answer+

Enter your name and press RETURN.

For example, you could create a variable to keep
track of the student's name.


    Hi.  What is your name?

        Answer+ John Sather_

Enter your name and press RETURN.

For example, you could create a variable to keep
track of the student's name.


   Hi.  What is your name?

            John Sather


   Welcome to the PCD3 lesson John Sather.
   I hope you are enjoying yourself.

---

Press RETURN to continue.     

---

You can use the variable feature to tell the
student the score he/she achieved on a test.

For example, I will give you five questions and
when you are done I will give you your score.

These questions deal with analogies.  In each question,
you will first see two capitalized words.  Try to
establish a relationship between these two words.  Then
select from the five lettered word-pairs that word-pair
which bears a relationship which is the same as that of
the two capitalized words.

Source for questions:  Scholastic Aptitude Test for
College Entrance, 1975 (I:II,55).

# GOT IT?

---

Press RETURN to continue.     

---

1.  WEALTH : LUXURIES

    a.  enemies : friends
    b.  sandwich : bread
    c.  ticket : admission
    d.  crying : sympathy
    e.  story : moral

Answer+ _

Press a, b, c, d, or e.

---

1.  WEALTH : LUXURIES

    a.  enemies : friends
    b.  sandwich : bread
    c.  ticket : admission
    d.  crying : sympathy
    e.  story : moral

       d

Sorry.  The correct answer is c.

Wealth enables one to obtain luxuries just as a
ticket enables one to obtain admission.  Choice d
might be correct if sympathy were substituted with
something material, as luxuries and admission
are both material things.

Press RETURN to continue.

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2. PEAK : SUMMIT

    a. mutation : change
    b. gun : soldier
    c. elementary : advanced
    d. switch : current
    e. foreign : native

Answer+

Press a, b, c, d, or e.

---

2. PEAK : SUMMIT

    a. mutation : change
    b. gun : soldier
    c. elementary : advanced
    d. switch : current
    e. foreign : native

    a

Very good !

Summit is simply another word for a peak, just
as change is another word for a mutation.  None of
the other choices are synonymous.

Press RETURN to continue.

3.  ANGLE : DEGREE

    a.  letter : alphabet
    b.  milk : quart
    c.  area : square inch
    d.  time : minutes
    e.  society : classes

Answer→

Press a, b, c, d, or e.

---

3.  ANGLE : DEGREE

    a.  letter : alphabet
    b.  milk : quart
    c.  area : square inch
    d.  time : minutes
    e.  society : classes

      c

Very good !

One measures an angle by means of the degree,
just as one measures an area by means of the
square inch.  Each is the smallest measuring unit
for each of the things to be measured.  Time can
also be measured in seconds.  Milk can also be
measured in pints.

Press RETURN to continue.

4.  SHIP : HARBOR

    a.  flower : garden
    b.  village : people
    c.  nest : bird
    d.  editor : newspaper
    e.  car : garage

Answer→ _

Press a, b, c, d, or e.

4.  SHIP : HARBOR

    a.  flower : garden
    b.  village : people
    c.  nest : bird
    d.  editor : newspaper
    e.  car : garage

        a

Sorry.  The correct answer is e.

Just as a ship is always entering or leaving a
harbor, where it is naturally suited, a car is
always entering or leaving a garage, where it too
is suited.  None of the other choices are
analogous in this way.

Press RETURN to continue.

5. MUSIC : GUITAR

    a. stamping : noise
    b. water : ocean
    c. windows : house
    d. words : typewriter
    e. tears : sorrow

Answer→ _

Press a, b, c, d, or e.

5. MUSIC : GUITAR

    a. stamping : noise
    b. water : ocean
    c. windows : house
    d. words : typewriter
    e. tears : sorrow

        d

Very good !

Press RETURN to continue.

Thanks for taking the test.

You got 3 questions right.

Your score is 60 % correct.

Press RETURN to continue.

# This is the end of the VARIABLES section of the lesson.

# You will now go back to the main menu.

Note: For more information on variables, refer to Chapter 8 of the PCD3 user manual.

Press RETURN to go back to the main menu.

Nodes

Type the letter of your choice ▶
                           or press SHIFT-RETURN to exit menu.

```
+ a.  COURSEWARE STRATEGY

+ b.  TEXT

+ c.  GRAPHICS

+ d.  QUERIES

+ e.  CONTENT

+ f.  VARIABLES
```

(- = not available)                    (+ = previously selected)


Note:  To make a selection press one of the a thru f keys.
       To exit the menu and go to the end of the lesson
       press SHIFT-RETURN.


```
                                                   information

    You have come to the end of this PCD3 lesson.  This
    lesson was intended to demonstrate some of the basic
    features of the following PCD3 capabilities:

         -  courseware strategy
         -  text
         -  graphics
         -  queries
         -  content
         -  variables

    For more detailed information about these topics, refer
    to the PCD3 user manual.


    Good luck in using PCD3.
```


```
   Press RETURN to end the lesson.            instructions
   Press SHIFT-RETURN to go back to the main menu.
```

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# APPENDIX

Appendix B

List of Other PCD3 Users

NO PRINT

## APPENDIX B

The names and locations of three other military organizations using the PCD3 product were provided to the author by Jera M. Poole, Program Marketing Manager, Government Systems Marketing, 133 Hospital Drive, Ft. Walton Beach, FL, 32548, tele. 904-244-7173. Telephone interviews resulted in the following information:

1. PCD3 is being tested for possible use in the Armor School at Ft. Knox, KY (10:--). They are currently using PLATO on a mainframe and are investigating the feasibility of using PCD3 in such courses as the Armor Officer Advanced Course, Middle Management Training for Armored Cavalry, Combat Support, NBC Warfare Training, Air Defense Artillery, and Field Artillery. Courses in the areas of maintenance and leadership are also being considered for usage with PCD3. Point of contact is:

> Maj Tim Carroll
> Chief, Computer Based Training Division
> Autovon 464-5934, 7462
>
> Mailing address:
>
> Commandant, US Army Armor School
> Attn: ATSB-DOTD-CBT
> Ft. Knox, KY 40121-5200

2. PCD3 is being tested for possible use in the Academy of Health Sciences at Ft. Sam Houston, TX (9:--). They are currently using PLATO on a mainframe and are investigating the feasibility of using PCD3 for their training in courses covering enlisted medical training, officer computer literacy, drill and ceremony, nursing, and pharmacy. Point of contact is:

> Dana Baker
> Autovon 471-3375, 6352
>
> Mailing address:
>
> Commandant, Academy of Health Sciences
> Attn: HSHA-ILR
> Ft. Sam Houston, TX 78234-6100

3. PCD3 is being considered for use in all the core courses

at the US Air Force Academy (11:--). They were waiting for the December 1986 release from Control Data Corporation of interactive video support for PCD3 before making any further evaluation of the product. Point of contact is:

Maj Mike Carter
Director, Computer Based Education
Autovon 259-4195

Mailing address:

USAFA/DFXP
Colorado Springs, CO  80840

# END

# 7-87

# DTIC